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Rocks and Minerals

Official Journal of the Rocks and Minerals Association

A Magazine for Mineralogists, Geologists and Collectors

November, 1947

35c

Vol. 22, No. 11 *Whole No. 196*

17th LIST OF FINE MINERALS

DIOPTASE, Kirghiz Steppes. Good xls. on Calcite. 1¾ x 1½ $10.00
Another, small x.s. on rock. 1½ x 1 ..... 2.00
WHITNEYITE-ALGODONITE, L. Superior. Solid mass. 3 x 2 x 2 (11½ lbs.) 5.00
SPINEL, Orange Co., N. Y. Large crude xl. 3½ x 3 x 2½ 3.00
SILVER, Kongsberg. Brilliant thin plates w. some Calcite. 2 x 2 ..... 6.00
SILVER, Arqueros, Chile. Bright xld. mass. 1¾ x 1 ..... 3.00
ANDRADITE v. TOPAZOLITE, Bavaria. Small xls. on Serpentine. 2 x 1½ 2.00
SCAPOLITE (WERNERITE), Finland. Large xls. in rock. 3 x 2 x 2 .... 2.00
MINIUM, Altai Mts. Scarlet incrustation on rock. Very good. 2½ x 1½ 7.50
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OPAL v. PRECIOUS OPAL, Queensland. On Ironstone. 2 x 1½. Tax incl. 7.50
ARSENIC, Harz Mts. Botryoidal crust. 2 x 1½ 1.50
RUTILE, Philadelphia, Pa. Reticulated x's. on xld. Quartz. 3 x 3 x 2 .... 2.50
ATACAMITE, Chile. Minutely xld. in matrix. Very good. 4 x 2 x 1½ .. 7.50
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HEMATITE, St. Gotthard. Xld. "Eisenrose". 1½ x 1 ..... 3.50
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ORTHOCLASE v. ADULARIA, St. Gotthard. Good 1¼" xl. on matrix. 2½ x 2 ..... 3.00
A complete loose xl. w. some Chlorite. 1½ x 1¼ 2.00
RUTILE, Graves Mt. Ga. Brilliant 1" twin xl. in matrix. 1¾ x 1½ 2.50
A loose brilliant twin, not complete but with many faces. 1¼" 1.50
BERYL, Colombia. Term. lt. green x's. in parallel position. 1 x ⅞" 5.00
ARAGONITE, Herrengrund. Twin xls. on mass. 2½ x 2½ 2.00
HALITE, Bavaria. Very deep blue cleavage. 2 x 2 x 1 ..... 2.50
A large xled Specimen, blue, violet and white. 4 x 3 x 1½ 5.00
FLUORITE, Bavaria. Group of large deep amber yellow xls. 3½ x 2 x 2 .. 4.00
CASSITERITE. N. Nigeria. Group of brilliant black twin xls. 1½ x 1¼ .. 3.50
MOLYBDENITE, New South Wales. Superb pure sheet. 5 x 4 x 3/16" .. 6.00
AXINITE, France. Excellent xls. w. greenish Quartz xls. 2 x 1¾ 3.50
SMITHSONITE, Laurium. Thick green xld. crust on rock. 2 x 2½ x 1½ 2.50
POURNONITE, Horhausen. Two good brilliant x's. on rock. 2 x 2 ..... 3.00
STANNITE. Cornwall. Massive w. Chalcopyrite. 2½ x 2 ..... 2.00
CERARGYRITE. N. S. Wales. Small xlline masses in Kaolin. 2½ x 1½ x 1½ 4.00
ARSENOPYRITE, Ontario. Xls. in matrix. 2 x 2 ..... 1.25
BETAFITE, Madagascar. Crude xl. 2½ x 2. 6 oz.) 7.50
COPPER, Lake Superior. Group of excellent xls. 2 x 1½ x 1 ..... 3.00
MALACHITE ps. after AZURITE, S. Australia. Very good xld. group. 3½ x 2½ 6.00
CALCIUM LARSENITE, Franklin. W. Willemite, etc. Good fl. 4½ x 3 .. 5.00
WILLEMITE. Franklin. White radiated, phosphorescent. 3 x 2 ..... 3.50
CROCOITE. Ural Mts. A small but well-xled. specimen. 1¼ x 1 ..... 2.00
ANALCITE. Paterson, N. J. Good x's. up to 1" on rock. 3 x 2 ..... 2.50
PYROMORPHITE, Phoenixville, Pa. Small xls. on Quartz xl. 3 x 2 x 1½ .. 1.50

HUGH A. FORD

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No lists furnished, but enquiries for specific minerals welcomed.

ROCKS and MINERALS
PUBLISHED MONTHLY

Edited and Published by
PETER ZODAC

NOVEMBER
1947

Contents for November, 1947

CHIPS FROM THE QUARRY 1002
TOPAZ AREAS OF THE THOMAS RANGE, UTAH. *By Ronald L. Ives* 1003
JADE POLISHING. *By L. A. Basinski* 1010
TRIP TO DETROIT. *By Peter Zodac* 1011
AN UNUSUAL GOLD OCCURRENCE. *By Guy B. Ellermeier* 1017
BERYL HUNTING IN NEW HAMPSHIRE. *By T. Orchard Lisle* 1018
PRODUCTION OF GEMS SOAR AS TOURISTS SNAP UP OFFERINGS 1022
A VISIT TO TWO MARYLAND MINES. *By Vernon J. Miller* 1023
A TRIP TO COPPER MINE HILL, R. I. *By A. M. Dixon* 1024
THE MINERAL KEY (BIBLIOGRAPHICAL NOTE) 1026
MINERALS ON THE SIDE. *By James A. Taylor* 1027
THE OLD SAILOR HOLDS FORTH ON GYPSUM. *By Timber Hitch* 1028
GRIEGER'S 15TH ANNIVERSARY CATALOG 1029
WORLD NEWS ON MINERAL OCCURRENCES 1030
PRACTICAL SUGGESTIONS FOR THE MINERALOGIST. *By Herbert O. Albrecht* 1032
WORLD'S LARGEST SHOVEL DIPPER AT WORK IN OHIO COAL FIELDS 1034
CLUB AND SOCIETY NOTES 1036
INDEX TO ADVERTISERS 1100

Entered as second-class matter September 13, 1926, at the Post Office at Peekskill, N. Y., under the Act of March 3, 1879
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Specially written articles (as contributions) are desired.
Subscription price $3.00 a year; Current numbers, 35c a copy. No responsibility is assumed for subscriptions paid to agents and it is best to remit direct to the Publisher.
Issued on the 25th day of each month.
Authors alone are responsible for statements made and opinions expressed in their respective articles.
ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

The official Journal of the Rocks and Minerals Association

CHIPS FROM THE QUARRY

IT HAPPENED IN DETROIT!

It was the night of the big banquet in Detroit of the Midwest Federation of Geological Societies and we had about 35 minutes to get ready. We rushed into the hotel for a quick washup, shave, change into a clean shirt and then, we tried in vain to recall the name of the building where the banquet was to be held. But why worry? The literature obtained during the Convention would give us the name and its location, and a taxi would get us there in a hurry. But a search through the literature we had was hopeless as the only reference to the banquet was "Saturday, August 23—7:00 —Banquet".

We now tried desperately to recall that odd-sounding name we had heard so often but to no avail and slowly the minutes ticked away—6.50—6.55—7:00! Too late.

How we happened to miss the banquet goes like this:

We had been cordially received by the officers and members of the Michigan Mineralogical Society, the host Society of the Convention, a number of whom drove us from one end of the city to the other, zigzagging back and forth in order that we might see all the sights. Now and then some member of the party would wave his hand towards a not-too-far-off building and say—"There's where the banquet will be held"—and he would give the building a name which to us sounded unusually strange as we never heard it before. After we passed through that section of the city, four or five times, and each time that building would be called to our attention, with its odd-sounding name, we recognized it on our last trip (with Mr. Hugh Millar who was taking us back to the hotel from the Convention) and we waved our hand towards it, saying—"That's the building where the banquet will be held", and he nodded assent. Had we only kept our mouth shut he would, naturally, have asked us, as he left us off at the hotel, if we knew the name of the building and how to reach it.

Next morning, the first person we met was Mr. Geo. E. Anderson, President of the Chicago Rocks and Minerals Club, who inquired—"Where were you last night? Why did you not show up at the banquet?" On being told that we could not recall the odd-sounding name of the building he expressed amazement as he told us—"It was the Engineers Club!"

The Engineers Club! We were dumfounded and how! Why didn't someone tell us that before? Everyone, and on at least two dozen or more occassions, had called the building by that odd-name which we later learned was "Rackham." Further inquiry revealed that Rackham was a Detroit engineer, and the building was named in his honor.

We found, too, that the people of Detroit are mighty proud of their state and especially their city and this latter attribute was the cause of our missing the banquet. Engineers clubs are common throughout the country but there may be only one Rackham Building in the entire world and that one is in Detroit. So the good citizens of Detroit would not desecrate the name of this particular ediface by calling it the Engineers Club. To them it is and always will be the RACKHAM BUILDING!

ROCKS and MINERALS

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TOPAZ AREAS OF THE THOMAS RANGE, UTAH

BY RONALD L. IVES

Vice-President, Rocks and Minerals Association

ABSTRACT

Location and geologic environment of the topaz areas of the Thomas Range, Juab County, Utah, are here described, with a brief outline of present collecting conditions.

INTRODUCTION

The locally-famous topaz mines of the Thomas Range, Utah, were first seen by the writer in the summer of 1926, at which time they were operating on a very small scale. During the years 1942-1945, assignment to a nearby Army post made possible a number of trips to the area, during which time the data here presented were collected.

As is common with isolated mineral deposits, conditions as reported in nearby towns differ markedly from those found in the areas, due to serious misplacements of the decimal point. Despite these erroneous reports, however, the topaz areas are well worth one or more visits, and they produce a number of interesting specimens.

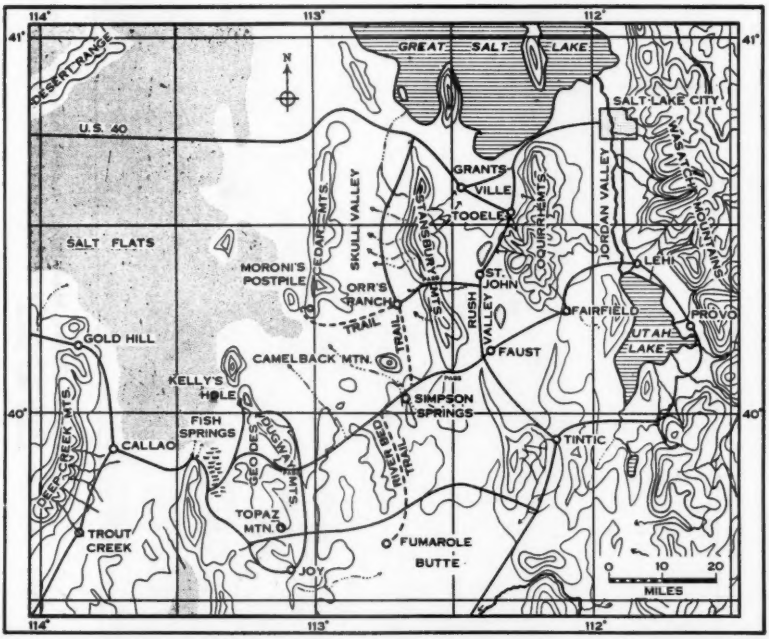


Fig. 1. Outline map of the Utah Desert area, showing location of Topaz Mtn. (lower left center). Contour interval is 1,000 feet. Lowest contour is 5,000 feet.

Fig. 2. Topaz Mountain, as seen from the Cherry Creek–Fish Springs road close to the cairn marking the turnoff of the Topaz Mountain road. Major topaz areas are in the valley under the arrow.

LOCATION AND ACCESSIBILITY

The topaz areas of Juab County, Utah, are located in the southeast part of the Thomas Range, in a region about two miles square, centered at Lat. 39°42' N; Long. 113°06' W; where altitudes range from 5,300 to 7,600 feet above MSL. Very general location of this area is shown in Fig. 1. A more specific, but not much more accurate, location can be found on the U.S.G.S. Fish Springs Quadrangle, or current issues of the Salt Lake City aeronautical maps. No two maps of the region are in agreement, due to inadequate surveys and to pronounced magnetic anomalies in the area.

To reach Topaz Mountain from Salt Lake City, go to Simpson Springs, Tooele, County, by any convenient route. The best road, at the time of this writing (winter, 1945) is via Tooele, St. John, and Lookout Pass. The last dependable supply point is Tooele; last certain water is at Simpson Springs.

From Simpson Springs, go west-southwest on the only improved road for about 17 miles, to the Keg Mountain Road, which turns south from the Dugway Pass Road about two miles east of the pass. This is the only improved road turning south in this general area. Go south on the Keg Mountain Road about 11 miles to the first intersection (Cherry Creek Road), turn west and go about 2 miles to a large rock cairn on the north side of the road. The road turning north here goes to the major topaz deposits.

General appearance of Topaz Mountain from the cairn is shown in Fig. 2; topography and trails close to the topaz areas are shown in Fig. 3. Do not attempt to take an ordinary car over trails marked "jeep trail", or "jeeps only". Do not count on getting supplies at Joy (Fig. 1), as the old townsite is now (1945) abandoned. Freighter's Well, about one mile north-northwest of Joy, is an emergency source of water, but is somewhat

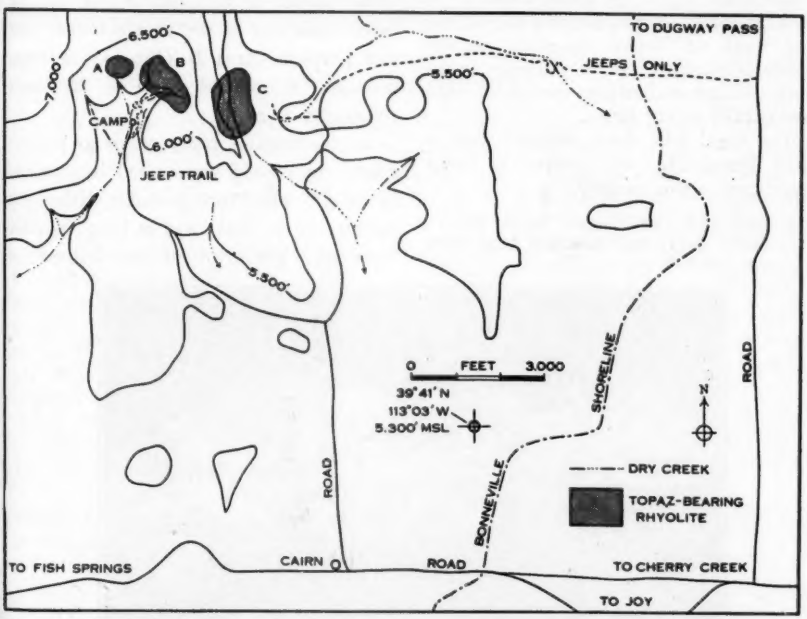


Fig. 3. Sketch map showing location of major topaz areas, roads and trails giving access to these areas, and generalized topography. This is a sketch map, not a detailed land survey.

hard to reach and find, for anyone not familiar with the area.

GEOLOGIC ENVIRONMENT

The Thomas Range is a complex of early paleozoic sediments, mostly Cambrian limestones, sandstones, shales and quartzites, which is partially and irregularly metamorphosed, repeatedly faulted, and intruded with large masses of soft gray rhyolite, probably in mid-Tertiary time. Topaz is present as phenocrysts in this rhyolite.

On the west side of the Thomas Range are a number of limestones and dolomites, possibly representing the Madison and Desert limestones, of Mississippian age. Exact dating is not too certain, as fossil collections from this area leave much to be desired.

A much more compact rhyolite, containing no topaz, is present on the northwest flank of the range; and some rather recent basaltic rock is found near Dugway Pass, where the Thomas Range joins the Dugway Range. This is near the Dugway geode placers(1). Numerous other volcanic deposits and structures are found just south of Topaz Mountain, in the Drum Mountains, where multiple intrusions and mineralizations continued until geologically recent times.

The usual lake shore deposits, due to Lake Bonneville, are present at lower elevations in this vicinity.

1 Ives, R. L., The Dugway Geode Placers, Utah. *Rocks and Minerals*, July, 1946, pp. 411-415.

TOPAZ COLLECTING

Topaz crystals are widely distributed over the area, and may be found not only in the dry creeks originating in the major topaz deposits, but in almost any dry creek bed in the Thomas Range. A few topaz crystals have been found in lake shore sediments, some as far from the probable source as Fish Springs.

Placer topaz is best recovered by sifting the dry creek sediments, then sorting the residuals in bright sunlight. Although this is a laborious and unromantic process, it is the best method of recovering topaz in this area. Best collecting season is early summer, after the annual rains have removed the finer sediments from the creek beds. Many of the largest crystals have been found in the bottoms of filled plunge pools in the creek beds, close to bed rock. Typical crystals recovered in this manner are shown in Fig. 4.

Despite the productivity of placering, most visitors to the area prefer to dig their topaz out of the source rocks. For this purpose, Area B (Fig. 3) is most suitable. A general view of this area constitutes Fig. 5.

In this rhyolite, topaz occurs as phenocrysts, completely surrounded by matrix; in nests", which are probably filled gas bubbles in the lava; and in long veinlike openings. These, in all probability, are

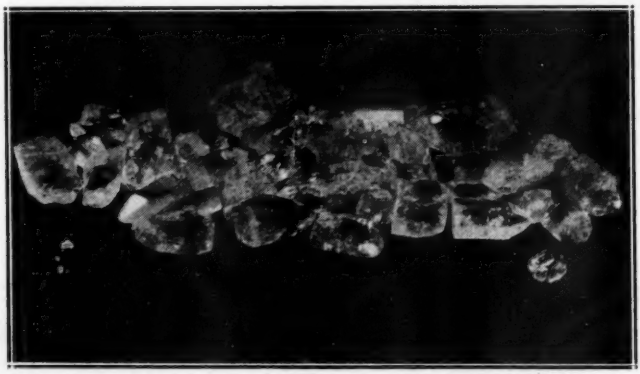


Fig. 4. Placer topaz from the creek bed just above the Utah Mineral Society's camp at Topaz Mountain (Fig. 3).

Fig. 5. Topaz-bearing rhyolite at area B (Fig. 3). The largest crystals are found within the dashed outline. The jeep in the lower right gives scale.

solution cavities, created along flowage shears by hot mineral waters related to the original intrusion. Two views of the porous nature of the rhyolite are shown in Fig. 6.

Study of collected crystals from Topaz Mountain discloses that the smaller crystals are substantially perfect, and are most commonly weathered out phenocrysts. The larger crystals, most of which are weathered out of nests or cavities, commonly are somewhat distorted, and many contain phantoms, visible under polarized light. Crystals from large cavities are usually checked parallel to the base, as is indicated in Fig. 7. This checking is commonly attributed to frost action, but some other explanation, such as interruption of formation, seems more plausible, as there is no marked decrease in degree of checking with depth, while frost action normally is limited to a zone close to the surface.

A number of collectors have blasted away parts of the matrix in an effort to recover more crystals, usually with disappointing results. In many instances, 60 percent blasting gelatine or black TNT was used, with the result that many crystals were shattered for each one recovered. This ill-advised use of high explosive is extremely wasteful. Greater crystal recovery will result if the larger fragments are loosened with a milder explosive, such as black powder, and the smaller pieces broken up with a hammer. The shock waves produced in the matrix by high explosives, such as nitroglycerine and TNT, are so violent that most crystals are completely pulverized.

Analysis of a large number of collections from Topaz Mountain discloses that size distribution of crystals found is approximately as follows:

1/16"—⅛" diameter—92%
⅛"—¼" diameter—6%
¼"—½" diameter—1%
—over ½"—1% or less.

Fig. 6. Porous rhyolite at area B, Topaz Mountain. Walls of the openings are lined with topaz crystals, of various sizes, and varying degrees of perfection.

The largest topaz reported found in the area is supposed to have been the size of a child's head. The largest seen from area B is a crystal slightly smaller than a hen's egg, and this was not only badly checked, but contained a phantom. Several dozen gem quality crystals about the size of a robin's egg are found annually. This is at the rate of less than one per visitor. Most collectors can expect to find good crystals in the ¼"—½" size range on their first visit to the area, but finds of larger crystals are mostly a matter of luck.

OTHER TOPAZ AREAS

Three major topaz areas are shown in Fig. 3. These are the most productive, but not the only, topaz areas in the Thomas Range. Several other rhyolite masses are present on the west side of the mountains, and one area, composed of what looks like dried mud, on the southwest side, produces some good topaz. Small topaz crystals are present in rhyolites on the west side of Whirlwind Valley (Fish Springs Quadrangle), but these are all of poor quality and almost microscopic dimensions.

Some years ago, several rather large topazes were found near Delta, Utah, in stream deposits related to an ancient channel of the Sevier River. Although these were probably washed out of the Sevier Canyon, the exact source has not been located.

ADJACENT FEATURES OF GEOLOGIC INTEREST

On the west side of the Thomas Range is an extensive system of mineralized faults, which is currently being prospected for fluorite, which is present as brilliant purple amorphous masses and replacements. Some of these masses appear to be fossil corals, in which the septal structure has been replaced by fluorite.

South of Topaz Mountain is the Drum Mountain group of basalt flows, which overlie rhyolitic and other igneous masses. This area was once a small producer of copper and gold. Here, a few years ago, was found the Drum Mountain meteorite, now in the U. S. National Museum. According to sheepherders' tales, a large iron rock was found near Joy about 50 years ago, and was taken to some place in Nevada, where it was used as an anvil. This may be another meteorite. Efforts to trace it down have been unsuccessful to date.

Whirlwind Valley, just west of Joy, contains a number of eroded basaltic cones, possibly of Pliocene age; some recently-extinct hot springs; and numerous deposits of diatomaceous earth, of later Pleistocene age, containing very perfect gastropod shells. This material was deposited during high stages of Lake Bonneville.

In many parts of the Thomas Range—Drum Mountain area very well developed ventifacts (wind sculptured rocks) can be seen. These, although hardly collectors' items, are well worth looking over and photographing. Throughout the area, at levels below 5,250 feet (approximately) are shorelines, deltas, sand bars and boulder beaches related to the Pleistocene lakes of the Utah desert.

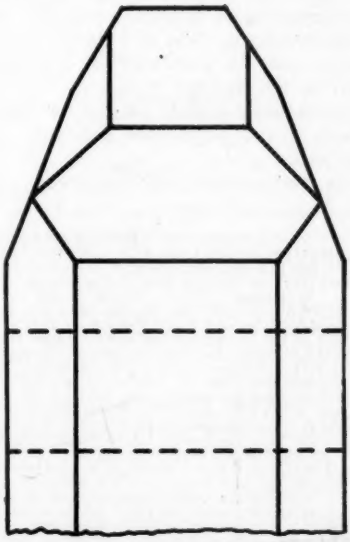


Fig. 7. Sketch of a topaz crystal, showing checks parallel to the base (dashed lines). This checking is common in crystals from large cavities; is rare in crystals from "nests"; and is absent in crystals from a solid matrix.

CONCLUSIONS

The Thomas Range is a highly interesting mineral area, producing large quantities of topaz crystals of medium to small size; and containing many other features of geological and mineralogical interest.

One or more visits to the area are well worth while for the geologist and mineralogist, and many unsolved problems in the region await the professional researcher.

Dugway Proving Ground
Tooele, Utah
Nov. 11, 1945.

JADE POLISHING

BY L. A. BASINSKI

309 North Carlisle Avenue, Albuquerque, New Mexico

There are many methods used to polish nephrite jade. Of all the gem material that has been polished, jade seems to give the average rock polisher the most trouble.

Having tried all the methods used by others and experimented with many of my own, I found that a lubricant of some sort must be used to retard the abrasive action in the polishing and the finishing of jade.

After much research a perfect lubricant was found that could be used on all operations of sanding and final finishing of nephrite jade. The material that gave the perfect results is a dry powdered synthetic Resin, a plastic adhesive sold under the trade name of Cascamite. Cascamite may be purchased in any hardware or five and ten store.

Cascamite is a glue. Do not use Casco, which is also a glue but does not contain resin.

To use Cascamite, mix the powder with water to form a thin paste. Apply this paste on your sanding cloth, 120, 220, 320. It is important to let the paste dry thoroughly; best to let it dry for 24 hours.

The sander may be used for final finishing by using the back side of your fine sanding cloth. First size the cloth with a thin mixture of Le Page's glue and water. Allow to dry thoroughly, then mix the Cascamite into a paste and add levigated Alumina powder. Apply the mixture on the glue sized cloth and dry thoroughly. Run at regular sander speed.

This is a complete dry method of jade polishing, yet there is very little or no dust, as the surface of the abrasives used become slightly glazed from the synthetic resin.

You will also find that a beautiful fiinsh may be obtained on flat as well as curved surfaces.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933 Of ROCKS and MINERALS published MONTHLY at PEEKSKILL, N. Y., for OCTOBER 1st, 1947, — State of New York, County of Westchester.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared PETER ZODAC, who, having been duly sworn according to law, deposes and says that he is the EDITOR and PUBLISHER of ROCKS and MINERALS and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management of the aforesaid pulication for the date shown in the above caption required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the name and address of the publisher, editor, managing editor, and business manager is PETER ZODAC, PEEKSKILL, N. Y.
2. That the owner is: PETER ZODAC, PEEKSKILL, N. Y.
3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: NONE.
4. That the two paragraphs next above, giving the naes of the owners, stockholders, and security holders, if any, contain not only the lits of stockholders and security holders as they
4. That the two paragraphs next above, giving the names of the onwers, stockholders, and holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

PETER ZODAC

Sworn to and subcsribed before me this 19th day of September, 1947.

R. McCAFFREY

My commission expires March 31, 1949

TRIP TO DETROIT

BY PETER ZODAC, Editor
Rocks and Minerals

The Annual Convention of the Midwest Federation of Geological Societies was held this year in Detroit, Mich., on August 23, 24, 25. We did not hear about it until ten days before the August issue was to come out, so no opportunity was available to insert a notice in *Rocks and Minerals,* but we planned to attend.

We had made arrangements to leave La Guardia Airport (New York City) Thurdsay, August 21st, on the 12:15 p.m. plane for Detroit but though we arrived fully 15 minutes ahead of time, we missed our plane because—the airline office had sent us to the wrong airport—the plane left from the Newark, N. J., Airport. There was much telephoning here and there but the only outcome "the Company was very sorry and we would have to wait for the 3:30 plane." Fortunately the day was nice and the many planes landing and taking off proved intensely interesting so that the four hours passed by quickly.

There were only six of us on board the plane, which made its first stop in Philadelphia where more got on, and we soon got acquainted with each other. One of the passengers was a Mr. Phillips, whose company, the Solvay Process Company, operated a huge limestone quarry at Sibley, Mich. This same company operates another huge limestone quarry at Jamesville, near Syracuse, N. Y., which we visited on Friday, September 21, 1945, with Messrs. R. L. Sylvester and Fred C. Nhare, both of Syracuse. The Jamesville quarry is the third largest in the United States.

We reached Detroit Airport (at Willow Run, 32 miles west of the city) at 10:00 p.m., and Hotel Wolverine, in Detroit, where we had made reservations, about an hour later.

We found a message awaiting us at the hotel. It was from Dr. L. R. Bacon, President of the Michigan Mineralogical Society, requesting us to phone him on our arrival. He was much pleased to hear we were in the city and told us that Mr. John F. Mihelcic, President of the Midwest Federation of Geological Societies, would call for us in the morning.

Friday, August 22nd

Mr. Mihelcic called for us at 9:30 a.m. and we headed for his home (16543 Appoline, Detroit 27). Here we met Mrs. Mihelcic, a most charming lady, who is also keenly interested in minerals. And what a pleasant surprise we had on being shown Mr. Mihelcic's collection as the specimens were not only of excellent quality but were most attractively displayed. The minerals occupied a room in a corner of the cellar—the corner we were told which had formerly been the coal bin. This room was a model for neatness, and everything had been done by Mr. Mihelcic who is a manual training teacher in one of the city's high schools. The several hours spent with the Mihelcics, a most friendly and entertaining couple, passed by only too quickly and then Dr. Bacon called to take us away.

Salt Mine under Detroit

We headed south. On the way down we passed near the salt mine owned by the International Salt Co. We could see its shaft, about 500 feet to the left of the road (Fort Road, U.S. 25), which Dr. Bacon said was vertical and 1,400 feet deep. The salt company is apparently not friendly to collectors as no one is allowed on its property and no collectors approached seemed to know what minerals, aside from salt (halite), were found in the mine. The mine is approximately in the heart of Detroit, not far from the Ford Motor Co.

Dr. Bacon's Collection Seen

We stopped for a few minutes at Dr. Bacon's home (115 Emmons Blvd., Wyandotte) where we had a chance to examine his collection. Dr. Bacon is a chemist and his collection consists mostly of economic rocks and minerals but many of them were very interesting. We did not have too much time for the examination as Dr. Bacon had stopped to attend

to some business matter (a man had been waiting for him) and when this was finished we were on our way again.

Dr. Bacon was heading for the Rockwood quarry where we would have a chance to do a little collecting. Going south from Wyandotte, Dr. Bacon called our attention to a number of salt wells which bordered the left edge of the street down which we were traveling (West Jefferson St.) at the Wyandotte-Riverview city line. These wells belonged to the Pennsylvania Salt Co.

Rockwood Quarry

The Rockwood quarry is a favorite collecting area for members of the Michigan Mineralogical Society. It is located about one mile southeast of the little village of Rockwood, in the extreme northeastern part of Monroe County (about 20 miles south of Detroit). The best way to reach the quarry is to start from Rockwood, go east 0.8 mile on the Huron River Road, turn right on the Streicher road (a road sign is here), 0.3 mile further turn right on a dirt road which leads directly into the quarry.

Rough sketch showing location of quarry at Rockwood, Mich. (Not to scale).

The Rockwood quarry, operated by the Michigan Silica Company, is a huge pit about 3,000 feet long, 1/3 of which is 1000 feet wide, the remainder 300 feet wide, with walls 50 feet high. The rock is a dark gray friable sandstone which is used chiefly in the manufacture of glass.

At one point, near the small plant erected in the quarry, is a spot especially prolific for celestite. Here the mineral is found in nice platy faint bluish crystals. Small cream-colored calcite crystals, on celestite, are also common. The edges of these calcite crystals fluoresce green under the Mineralight. Dr. Bacon said that small sulphur crystals have been recorded as occurring here.

Sibley Quarry

On the way back to Detroit, we went a different way in order to stop at the Sibley quarry, which Mr. Phillips, the man we met on the plane, had told us about. This was indeed a huge quarry, about a mile in diameter we estimated, with vertical walls 50 feet deep. We did not enter the floor of the quarry due to the vertical wall as the entrance was somewhere on the other side, but we did walk along its western top edge which was only 50 feet from the road. The rock was a gray compact limestone and the only minerals seen were tiny white calcite crystals in vugs in the limestone and small dark gray chert masses in the limestone. A small quartz pebble, deeply stained red by hematite, was also noted. The quarry parallels the road (whose name we missed) for its entire length and its northern boundary is Sibley Road.

About 8:00 p.m. Dr. Bacon held a little meeting in the lobby of Hotel Wolverine (the Convention's headquarters). He had expected quite an assembly but only two, besides us, showed up; these were Mrs. Loretta E. Koppen, Secretary of the Federation, and Mr. Alger R. Syme, both of Minneapolis, Minn. Later Mr. George E. Anderson, of Chicago, Ill., showed up; Mr. Anderson is President of the Chicago Rocks and Minerals Society.

Saturday, August 23rd
(First day of the Convention)

The main activities of the day were to be held at the Cranbrook Institute of Science, Bloomfield Hills. The Museum is about 32 miles north of Detroit. To get there, Miss Ann Proctor, Secretary of the Michigan Mineralogical Society, and her sister, picked us up at 7:30 a.m. (Mr. Anderson also included) and we headed northward. We arrived at the Museum a little early (the first ones there) but in a few minutes the doors opened and we were allowed to enter.

The Museum is a nice brown brick building, beautifully situated in a wooded area. Its minerals, which are famous throughout the country, are located on the first floor. If the minerals are famous, their display is equally famous. The Cranbook Institute of Science has the distinction of being one of the most up-to-date museums in the country. Within a few minutes collectors began arriving and we were soon registering, but the mineral hall was continuously crowded up to the time of the opening of the Convention. We had been examining the minerals on display so intensely,, and made many notes, that our eyes tired and we went out for a little walk in order to rest them. In the little road cuts on one side of the Museum we noted some pebbles and two were picked. These proved to be milky quartz and black hornblende.

On the way into the Museum, an old friend, whom we did not know to be present, stopped us at the entrance. He was Mr. David M. Seaman, of the Carnegie Museum, Pittsburgh, Pa. This was our first meeting in some years and so it was a real pleasure to see him again. And like a good collector that he is, he had some minerals with him which he showed us. These were of a rare species of wurtzite which he had found at Wittmer, a surburb of Pittsburgh, and two of them were given us.

Convention opens about 11:00 A.M.

The program was officially opened about 11:00 a.m. by the President of the Federation, Mr. Mihelcic, who extended greetings to all present. Dr. Robert T. Hatt, Director of Cranbrook Institute. was then introduced who spoke briefly, and extended a warm welcome to all. The Convention then adjourned for lunch.

After a delicious luncheon at the Devon Gables in Bloomfield Hills, to which we were taken by Mr. and Mrs. Hugh Millar, we returned to the Museum and spent a most interesting half-hour, with Mr. Millar, walking down the geological trail. This trail, which began at one corner of the Museum and extended for several hundreds of feet, had large boulders of rocks and minerals bordering both sides of it. Descriptive signs acompanied each boulder. This trail is very popular with visitors.

The afternoon session began at 1:30 p.m. with Dr. George V. Cohee, of the U.S. Geological Survey, who gave a most interesting talk on gas and oil in Michigan.

Miss Helen M. Martin, Research Geologist, Michigan Geological Survey, was the next speaker whose subject was "The relation of Michigan geology to U.S. history." Miss Martin is apparently a favorite with Michigan collectors as she was warmly received and applauded.

The last speaker was Dr. Willard Parsons, Dept. of Geology, Wayne University, who spoke on the origin of Michigan's mineral deposits.

This concluded the activities for the day and the group began to disperse. We went back with the Millars, but made a stop in Birmingham, to call on Mr. C. K. Worthen, President of the Michigan Lapidary Supply and Research Co. Their store and shop at 195 Pierce Street was filled to overflowing with nice polished slabs, rough gem material, and lapidary equipment of all kind. We spent a most interesting hour or more examining the extensive stock and it was with regret that we had to leave.

The return trip to Detroit was a most interesting one as Mr. Millar zigzagged back and forth in order to show us the many noted buildings and establishments (including Wayne University) for which Detroit is famous. We would have liked to make a stop at Wayne University to see their mineral collection, induced by

Dr. Parsons' very interesting talk, but it was too late in the day. We reached the hotel about 6:25 p.m., where we washed up in preparation for the banquet at 7:00 p.m. But—we never got to the banquet. When we were all ready to go, it dawned on us that we did not know the name of the building where it was to be held nor did we know of its location—and there was nothing posted in the lobby. Though we missed the banquet, we did spend a most pleasant evening walking the streets of Detroit and getting a night-view of the great city. At the banquet, we later learned, Dr. A. N. Goddard gave a most interesting talk on "Mineral Collecting;" Mr. Ben Hur Wilson also gave a most interesting talk and his subject was "Review of the growth of mineral societies."

Sunday, August 24th
(Second day of the Convention)

On this day a field trip to the famous Clay Center, Ohio, limestone quarry was held. Mr. B. E. Tiffany, of Detroit, called for us at 9:30 a.m. Mr. Geo. Anderson and a Mr. Nordberg (?) joined us.

The route south to Rockwood was practically the same as the one taken two days before with Dr. Bacon. We passed the salt wells along W. Jefferson Street and went passed Streicher road (it was too far away for us to see the Rockwood quarry), but from Rockwood down (on U.S. 24) it was all new territory to us. On the southern outskirts of Monroe we saw something way off to our left that looked like a headframe—this may have been the plant of the Monroe quarry which is also famous for minerals.

The meeting place for the collectors was at the Michigan-Ohio State Line on U.S. 24 (at 11:00 a.m.) Here we found a large group already present and the day being hot, all sought refreshments in the large stand located almost on the state line.

In about one-half hour, the caravan of cars, each bearing an MWF card in its rear window (for identification purposes), got underway heading for Clay Center via Toledo. We crossed the Maunee River in Toledo, via a long concrete bridge. While still in the city we got on Ohio 120 from which we soon turned off for Clay Center, a very small community, about 10 miles southeast of Toledo.

Clay Center Ohio

The quarry at Clay Center is at the end of 5th Street. It is a huge pit approximately 4000 x 4000 feet in area with vertical walls 100 feet high. The rock is crystalline dolomite, of a blue-gray or buff color, which is burnt for lime. The quarry is operated by the Kelly Island Lime and Stone Co.

No sooner had we reached the quarry then it was time to eat and soon food began to appear on all sides of us. Mr. and Mrs. L. E. Caine, of Ferndale, Mich., and their two young daughters, invited us to join them. What a meal we had! Fried chicken, potato salad, tomatoes, fruit, cake, pie, ice tea, etc. etc. etc. We, who are accustomed to taking a small sandwich and an apple on a collecting trip, were simply astonished at the large amount of delicious food that was spread out before us. And didn't it taste good! There was so much of it that they supplied a number of visiting collectors. And just as we finished eating, along came Mr. Mihelcic with some sandwiches that Mrs. Mihelcic had prepared "especially for us". Though we were full, we managed to make room for them. To top it all, Mr. Caine gave us two beautiful loose crystals of golden calcite from the Monroe quarry.

After "lunch" (it was more like a banquet), collecting started in earnest. On the western side of a small "mound" left in the center of the quarry, which Mr. C. O. Gettings, of Toledo (who was present) called "Celestite Mt." is where we found our choicest specimens. Here celestite was so common that it lay strewn all over the ground. It was whitish in color, with a faint bluish tinge, and occurred chiefly in flat tabular crystals and groups of crystals and in size it likewise varied from tiny colorless needles to large platy crystals 2 or 3 inches long. The next common mineral seen was fluorite which occurred in dark brown cubes. Margaret Saxton, of Plymouth, Mich., a young lady of 14 win-

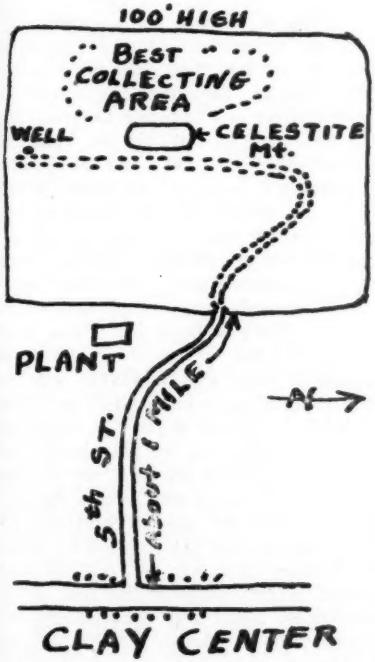
ters or summers, had some unusually good fluorite and she was kind enough to show us the spot where she had found them and we added a few very choice specimens to our "loot". Petrified corals, up to a foot in diameter, were unusually common. In the interstices of many of these corals would be found drusy colorless calcite, tiny fluorite crystals, celestite crystals, etc.

Among the minerals occurring at the Clay Center quarry are the following:

Asphaltum: A specimen at the Cranbrook Museum consists of small fluorite cubes coated by black asphaltum.

Calcite: colorless to pale yellowish crystals—some beautiful specimens have been found.

Celestite: colorless to white, oftentimes bluish-gray. Very fine crystals and groups of crystals, perhaps the finest known, have been found here. Some of the most interesting are the loose platy crystals which resemble arrowheads in shape. Celestite is easily the most common mineral at the quarry and hundreds of pounds could have been collected at the time of our visit.



Rough sketch showing location of quarry at Clay Center, Ohio. (Not to scale).

Copper: Mr. Gettings informed us that micro specimens of native copper have been found.

Fluorite: next to celestite, fluorite is the commonest mineral present and it is chiefly in some shade of brown, from almost colorless very light wine shade to very deep blackish-brown and practically always crystallized with celestite. Sometimes these two minerals, fluorite and celestite, are so intergrown as to resemble graphic granite in appearance. This fluorite is highly fluorescent under the Mineralight.

A deep purple drusy fluorite, in small groups on celestite, has also been found.

Galena: Said to exist in the quarry (Mr. Gettings.).

Marcasite: Occurs as small drusy crystals on dolomite.

Sphalerite: Someone presented us with a small specimen showing tiny transparent deep red crystals of sphalerite. These ruby sphalerites are highly prized by collectors. Deep orange crystals are also known.

Sulphur: small crystals have been found (so Mr. Gettings informed us).

At the south end of the quarry there is a well which furnishes nice cool water and it was a popular spot with many collectors.

There were 25 cars at the quarry and assuming 4 persons to each, at least 100 collectors were present.

Mr. Getttings invites Group

We left the quarry at 2:30 p.m. (remember it was a very hot day and the large open pit was unusually warm). We headed for Toledo but by another route where we stopped to inspect the collection of Mr. C. O. Gettings at 2001 Starr Avenue. The collection is housed in Mr. Gettings service station and he had quite an array. Especially plentiful were his Clay Center specimens some of which were unusually good. There were so

many collectors present (Mr. Gettings had invited them all) that it was impossible to do his collection justice and we missed most of it. But we do recall his hospitality and especially the free sodas which were "on the house".

Detroit waterfront visited

On the way back to Detroit, we took another route which was appreciated by all. Once in the city, Mr. Tiffany (we were still with him) gave us a ride along the waterfront which was most interesting. We went under the Ambassador Bridge (to Canada over the Detroit River), past the Vehicular Tunnel (also to Canada and under the Detroit River), and then around Belle Isle, the city's largest recreation park. Belle Isle, a most beautiful island playground, is in the Detroit River.

Dr. Goddard's Collection Inspected

About 8:00 p.m., accompanied by Messrs. Geo. Anderson, V. H. Rutkowski, and Joseph Vukovich, we journeyed to the home of Dr. A. N. Goddard, 630 Virginia Park, Detroit, to inspect his magnificent collection. The collection is housed in a large room on the second floor and the specimens are most remarkable for their quality and good display. We passed two hours easily inspecting the minerals. What made it especially interesting was Dr. Goddard's talk—he would call our attention to some feature of one mineral, an unusual color or form of another, or relate how he obtained this or that specimen, etc. One unusually fine specimen consisted of two twinned cinnabar crystals—a most rare form for the mineral. His story about how the specimen came into his collection was enjoyed by all. This very fine and rare specimen comes from the celebrated mercury mines of China (see "World's finest cinnabars come from China", *Rocks and Minerals,* May, 1944, p. 146).

Monday, August 25th

We were undecided at first what to do this day. Many of the members had signed up for a tour of the Rouge Plant (Ford Motor Co.) or of Greenfield Village, but as these trips had nothing to do with minerals they were of no interest to us. We had hopes of visiting Mr. Charles Nelson, at Grand Rapids, Mich., who would take us to the noted gypsum mines near his city; we had called him by phone on Friday and he was looking forward to our visit. In the meantime, Col. and Mrs. Fain White King, of Cairo,, Ill., were most anxious for us to visit them—in fact Col. King called our hotel five times before he could contact us. But fate seemed to be against us. It would take all day to get to Cairo by train; we could not get reservations on the one plane which left early in the morning for Paducah, Ky., the nearest airport to Cairo; we missed the one and early train for Grand Rapids; and to make matters worse it began to rain about 8:30 a.m. and how it did rain! So it seemed best to head back for home and especially so as we could get reservations on the 12:30 plane for New York. About 10:30 it stopped raining, then the sun came out and it was a nice day again.

Trip to Windsor, Ont., Canada

As we had about 2 hours before plane time, we made a short visit to Windsor, Ont., Canada, the little city across the Detroit River and opposite Detroit. The trip was made by bus, via the Vehicular Tunnel—fare 10c. We had no trouble in entering Canada and we found Windsor to be similar to any American city except that we could find no soda store—and did we get thirsty! A large drugstore was spotted and in we went but—a soda fountain was conspicuous by its absence. Then a large ice cream store was spotted but it was of no use to us because a large sign CLOSED was on its front door and similar signs were seen on other ice cream stores. A crosstown bus came along and we got aboard and rode to the end of the line, just to pass the time and also to see more of the city. At the end of the line, in Sandwich (S. W. Windsor), the bus stopped for about 10 minutes and we got out to look around. Right alongside the bus, at the junction of Mills and Baby Streets, we noticed some pebbles in the soil and out of curiosity we picked up two—one was milky quartz and the other basanite.

Windsor is very flat and no rock exposures seem to be present anywhere. A

few minutes after reaching the city, we stopped a police officer to enquire about rock exposures—he knew of none nor of any mineral localities in the vicinity. Along the main street in Windsor, not far from the bus terminal, we noted a few small pebbles in the soil but they too were common quartz—no signs of agate, amethyst, or jasper.

Back in Detroit

We went back to Detroit along the same route but found that entering the United States was more difficult than leaving it. We had to answer more questions, and to produce identification papers, etc.

We got the 10:55 bus out of Detroit for Willow Run Airport and boarded the plane, "Flagship Washington" (American Air Line) for New York.

Detroit is a bustling American city. Its manufacturing industries seem to be endless with huge plants everywhere. An oddity of the city, which covers a large amount of territory, is that within its limits are two large cities, Highland Park and Hamtramck, which are independent of Detroit.

Detroit and the terrain for miles around is flat—very flat. It seems to us that one could stand anywhere in the city and look for miles, if buildings and trees did not interfere, and the ground would not rise a foot.

Among the members of the Rocks and Minerals Association whom we had the pleasure to meet personally at the Convention were: Dr. L. R. Bacon, of Wyandotte, Mich.; Dr. A. N. Goddard, B. E. Tiffany, Hugh Millar, and Mrs. J. F. Mihelcic, all of Detroit; C. K. Worthen, of Birmingham, Mich.; Claude S. Bullen, of Ypsilanti, Mich.; George Anderson, Arthur and Lucille Sanger, all of Chicago, Ill.; Ben Hur Wilson and F. L. Fleener, both of Joliet, Ill.; V. H. Rutkowski, of Des Plaines, Ill.; Ben Bagrowski and Joseph Vukovich, both of Milwaukee, Wisc.; Alger R. Syme, of Minneapolis, Minn.; C. O. Gettings, of Toledo, Ohio; David H. Seaman, of Pittsburgh, Penn.; and Howard V. Hamilton, of Vandergrift, Penn. There were other members present but we did not get an opportunity to meet them.

Our visit to Detroit was a most enjoyable one and it was with regret that we had to leave the great city. But someday we will return!

AN UNUSUAL GOLD OCCURRENCE

BY GUY B. ELLERMEIER

1060 So. Gilpin Street, Denver 9, Colorado

Old prospectors have a saying that "Gold is where you find it." An adage that seems justified by the following occurrence. Late in August, 1947, the writer's wife ordered a chicken from a local poultry house. Her instructions were that the fowl was to be plucked and drawn, but not cut up.

That evening the chicken was delivered, and she proceeded to prepare it for the oven. Lodged in the folds of the gizzard, along with a few pebbles that since the first pterodactyl have served its descendants as grinders in lieu of molars, she found a bit of shining metal. Though her curiosity was aroused, we were entertaining company at the time so she laid the find aside, then promptly forgot the matter. Remembering the occurrence some days later, she handed the bit of metal to the writer with the usual query of the non mineral-minded: "What is it?"

"What is it?" proved to be a small gold nugget, quite irregular in shape, about a quarter-inch in length, weight: 2.9 gr., Troy. The nugget now reposes in the writer's cabinet along with other specimens of the precious metals and the label reads: Gold Nugget. *Locality:* Chicken Gizzard, Colorado.

BERYL HUNTING IN NEW HAMPSHIRE

BY T. ORCHARD LISLE

Experts say that the best time for hunting beryl crystals in New Hampshire is in the spring just after the rains have melted the snow. Boulders break away from the walls of the quarry; others split open and expose the crystals, and ardent collectors haven't started to swarm over the mine dumps to carry off the choice specimens. This was the lure offered me by Paul Burroughs, President of the newly formed New Hampshire Mineral Society. I succumbed to the spell of Paul's enticing letter, and made a trip at the end of April, 1947, in the good company of P. J. Kellinghausen (better known to his rock-hunting pals as "Kelly") and "Dusty" Dustin.

It lashed with rain part of the way on the Friday night, and howled with rain—cold rain at that—all the Sunday. Most of the snow had melted, but the roads up the mountainside in New Hampshire were muddy and slippery in many places; but Paul's jallopy with six men aboard made the grade without casualty, except that on the way back his trailer, loaded with minerals and our tools, broke away, and had to be pushed by hand for a mile or so. Paul is an excellent driver and knows his mining roads; but the next time I go beryl hunting I am going when the weather is likely to be more favorable. I ain't so young as I use to be and like my hard work flavored with climatic pleasure. Rain don't help my lumbago any! Paul has given me an invitation to come again before the Fall, and I hope to make it.

With "Dusty" at the helm we started out from New York, but as the weather was so bad we drove as far as the other side of New Haven, Conn. We were lucky to get the last cabin at a motel. The next morning we detoured from our direct route to Laconia, N. H., where Paul Burroughs lives, and paid the Portland, Conn., feldspar quarries a few hours visit. But this was largely wasted time. The dumps have been so well combed during recent years, that it takes many hours hard work digging to find anything worth while—at least, this is my experience. Anyhow, we didn't find anything worth writing to *Rocks and Minerals* about. We did find some fractured dark green tourmaline in radiating crystals, apatite, lepidolite, and massive garnet on white feldspar. With a little care the latter can be chipped with a hammer and chisel to make attractive, but worthless, cabinet specimens. We had thought of side-tracking

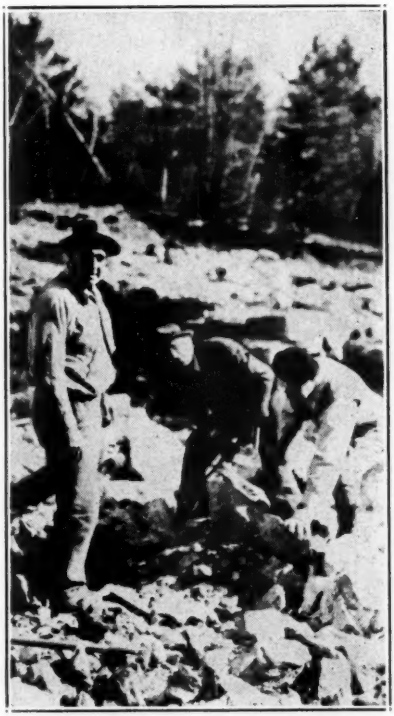
The beryl hunters on Bald Mountain, N. H., and on the road to the Palermo mine. Photo by the author.

to Haddam Neck, but decided that this would take too long, especially as our main objective was Laconia. Alternatively, we had thought of going to Lane's quarry at Westfield, Mass. Instead, we proceeded on our way to Laconia where our host and guide was awaiting our arrival. He was disappointed that we did not arrive until about 8 pm.

Paul very kindly placed a bungalow on the shore of lovely Lake Winnipesaukee at our disposal. The wood stove was burning in the living room, and an oil stove in the kitchen. The pleasing warmth was most welcome, as were the rye highballs our worthy host served to warm and cheer our inner selves. None of us had met Paul before, and his fine hospitality will indicate the type of man he is. They don't come finer! We sat up talking rocks until about 1:30 a.m. Once Kelly gets started on his favorite subject there is no holding him back. Well, we need more keen rock hunters like Kelly. He is a real enthusiast. Because of our late session we did not get started the next day until about 8:30 a.m.

Burroughs knows most of the well-known and little-known mineral locations in New Hampshire, Maine and Vermont, so we placed ourselves completely in his hands to take us where he would, and this was a wise step. Leaving Dusty's car at the bungalow, we got aboard the jallopy, and started off for Meridith, N. H. to pick up two other rock hunters, namely Frank Liggett and Charlie Weeks. Both are mineral dealers in their spare time, so we spent an hour or two looking over their personal and commercial collections. Some of their minerals they value so highly that they have no price on them, and so are not for sale. Incidently, Paul Burroughs, whose main pleasure is cutting, facetting and polishing gems, is turning professional, and specializes in stones for rings, pins, etc. He has a magnificent collection of cut gemstones, including three star rose quartz spheres—all of which he cut himself from the many rough crystals he has found on his trips in this territory. Paul is president of the New Hampshire Mineral Society, and was very active in its formation. Already the club has 100 members.

After a brief conference at Meridith, Paul headed the car towards North Groton on Bald Mountain, where the Palermo mine is located, and where 87 different minerals have been identified, including whitlockite and graftonite. By this time it was around the lunch hour, but once we reached the mine it did not take us all the afternoon to get thoroughly soaked by the pouring rain. The elements hampered crystal finding operations, but there were short spells when the rain eased up a bit. Nevertheless, we did reasonably well even if we did not find any real gem material. We did find green and golden beryl crystals. The writer found one twin green beryl crystal of parallel growth



At the Province Lake Mine. Left—Paul Burroughs. Center—P. J. Kellinghausen. Right—T. Orchard Lisle

with its termination broken off, and the stump was still in the matrix. He dug it it out of the road at the entrance to the mine. We also found autunite, gummite pale rose quartz, vivianite, triphylite, triploidite (altered beryl), epidote, purpurite and blue apatite crystals. The latter, unfortunately, broke in pieces when being chiseled out of the rock The autunite, of course, fluoresces a bright pale green.

New Hampshire beryl fluoresces despite the fact that G. F. Herbert Smith in his book "Gemstones" states otherwise. This is understandable, because it does not fluoresce noticably under the Mineralite, but shows a lovely dark blue under the purple-X bulb. Even the golden beryl fluoresces blue where fractured. One golden beryl was tapered. Along the road to the mine there are a number of large boulders of pale rose quartz, some of which is of good quality. Care is needed in breaking off pieces or there will be too many cracks or fractures, which will make it unsuitable for cutting and polishing small spheres. This pink quartz is slightly cloudy, but not sufficiently so to spoil its beauty. Another interesting specimen I found was a 2-inch long curved quartz crystal—not rose quartz. The Palermo mine is owned by Forrest Parmenter, who is one of the officers of the New Hampshire Mineral Society and operated by the Ashley Mining Co.

The next day was sunny, but chilly. Burroughs, Dustin, Kelly and the writer drove to the Province Lake mine, or quarry, near Granite and Wakefield, New Hampshire, which was first worked in the early 18th century. After some hours of hard work digging and sledge hammering, enough sky-blue beryl crystals were uncovered for all of us. Most of the heavy work was done by Paul who was untiring in his efforts. This meant getting down to the bottom of the rock pile. The best method is to select one spot and then all hands get to removing the upper rocks, breaking open the likely-looking ones. The deeper one digs the better the specimens.

Paul Burroughs did most of the hard work at the Province Lake Mine.

Hunting blue beryl at the Province Lake Mine on the border of New Hampshire and Maine.
Left—P. J. Kellinghausen. Center—Paul Burroughs. Right—Dusty Dustin
Photo by the author

In one side of the rock wall can be seen the ends of half-a-dozen blue beryl crystals, each several inches in diameter; but they will remain there until the solid rock is blasted with dynamite.

Paul and the writer decided to take a look-see in the woods around the mine for more dumps, or isolated rocks, containing beryl. We did find some old but small dumps, and others probably are covered with soil and vegetation. But no beryl crystal! After walking a little more, Paul suddenly shouted and pointed to a large rock in a small grassy depression. At one end of the boulder, raising its fractured termination to the equally blue sky, was a beryl crystal about 3 in. diameter by 4 inches long. To break it off was a simple matter. It was sticking up like a sore thumb, and it is extraordinary that it had not previously been seen by prospectors. To think of the years, and number of collectors that must have walked past this beryl without having seen it! Lying nearby was an iron derrick base plate on which was cast the maker's name. . . . E. W. Martin, Philadelphia, 1744. I now greatly regret that I did not walk back to the car, get my camera, and take a picture of the old plate. Guess my mind was concentrated on the fine beryl crystal in my hand.

Near Granite is to the so-called Mystery Pond, which is over ⅓-mile deep. Some of the local folks maintain that the actual bottom has never been reached by soundings so far taken.

LATER: In the company of Mr. and Mrs. Sampter of New York, N. Y., and Charles Neal of London, England, the writer made another visit to New Hampshire—this time in September when the weather was delightful. With Paul Burroughs we revisited the Palermo Mine, where Brazilianite crystals have recently been discovered by Mr. Ashley, president of the Ashley Mining Company, and identified by Professors Clifford Frondel of Harvard and C. W. Wolfe of Boston Universities, whom we found exceedingly busy searching for additional Brazilianite crystals and other rare and unknown phosphate minerals. They were doing some exhaustive work with sledge and pick in one of the open workings. Mr. Ashley courteously permitted us to search for minerals, although the mine was in full operation. Two small dynamite blasts were made while we were there. While the blasted rocks were full of beryl crystals, none were of gem quality. Nevertheless, we had a most enjoyable day. Mr. Sampter secured at least one small geode containing a Brazilianite crystal.

PRODUCTION OF GEMS SOARS AS TOURISTS SNAP UP OFFERINGS

WASHINGTON, Aug. 23—The Bureau of Mines today said United States production of gem stones has skyrocketed, "now that the best customer, the auto tourist, is again on the road." Production of jade leads the parade, with agate, turquoise and variscite next in order.

The bureau estimated that production of gem stones had increased from a value at the source of $40,000 in 1945 to $325,000 in 1946.

"Plenty of gasoline and greater leisure have permitted the mineral hobbyist to collect more minerals, some of which warrant cutting," a bureau summary of 1946 production reported. "The American costume-jewelry industry, shut off during the war from European sources of supply, is a second outlet for the product."

The report said prices during 1946 increased considerably "warranting the producer risking capital." It listed Central Oregon as the chief producer of agate and said that from a single pocket $8000 worth of agate was recovered in three days.

Rocks and Minerals is indebted to Wilfred C. Eyles, of Yermo, Calif., for the above clipping which was taken from some western paper. Unfortunately the name of the paper is not known so proper credit to it cannot be given.

A VISIT TO TWO MARYLAND MINES

BY VERNON J. MILLER
2120 Wilhem Street, Baltimore 23, Md.

INTRODUCTION

The two mines in this article, the Roop Copper Mine and the Mountain View Lead Mine, were visited by Harold Levey, Charles Freed, Robert Kuller, Leo Sirota, and myself in September of this year. Harold, Charles, and Bob are members of the Natural History Society of Maryland, and it was here that we all met; proceeding then to the mines in Hal's car.

ROOP COPPER MINE
LOCATION

This mine, which is not mentioned in "Minerals of Maryland",(1) is about one mile west of the town of New Windsor, in Carroll County, Maryland. The mine is situated on a farm and can be reached by making a left turn and following the dirt road for a short distance downhill. From the main road a small pond near the mine is visible and forms an excellent landmark.

PRESENT DAY CONDITIONS

Nothing much can be learned of the history of the mine except that it was worked in the 1850's(2). The diggings are scattered over a wide area, but the better specimens can be found in a small enclosed field near the farm house, and even closer to the pig pen. The above mentioned pond is a short distance from this field and here is found the shaft, which has long since caved in.

MINERALOGY

AZURITE—Stains on limestone.
BORNITE—Small masses in limestone.
CHALCOCITE—Small masses in limestone.
DENDRITES—Occurs with the copper minerals in both black and brown colors.
LIMONITE PSEUDOMORPHS — First recorded find. Found by Leo Sirota; later more found by Charles Freed. Small cubic crystals in matrix.
MALACHITE—Stains on limestone.
QUARTZ CRYSTALS—First recorded find. Found by Harold Levey. Small in size and discolored. Occurred with massive quartz. The specimen was taken for the Society's collection.

MOUNTAIN VIEW LEAD MINE
LOCATION

The mine is located about three miles southeast of Union Bridge at Beaver Dam Churches on Beaver Dam Run, in eastern Frederick County. To reach the mine one has practically to hack his way through a weed-grown path and go either over or under a barbed wire fence. Nothing remains of the site today except for a small dump and filled-in shaft several feet deep.

HISTORY

This was the only mine in Maryland ever worked for lead ore. However, nothing much ever came of it commercially; and it was abandoned a number of years ago. During the recent war the government did a little prospecting here, but slate was about the only thing unearthed(3).

MINERALOGY

AZURITE—In traces.
BARITE—White heavy cleavages.
BORNITE—Massive in limestone.
CALCITE—Crystals and orange cleavages.
CERUSSITE—Reported by Williams.
CHALCANTHITE.
CHALCOPYRITE—Massive and octahedral crsytals.
EPIDOTE.
GALENA—Massive disseminated in limestone.
HEMATITE—Specular.
MALACHITE—In traces as stains.
PYRITE.
QUARTZ—In crystals.
SPHALERITE—Green transparent and gray opaque.
SULPHUR—Reported by Williams.

REFERENCES:

1. "Minerals of Maryland," Ostrander and Price, Natural History Society of Maryland, Baltimore, Maryland, 1940.
2. and 3. This data learned from Harold Levey.

A TRIP TO COPPER MINE HILL, R. I.

BY A. M. DIXON
Foxboro, Mass.

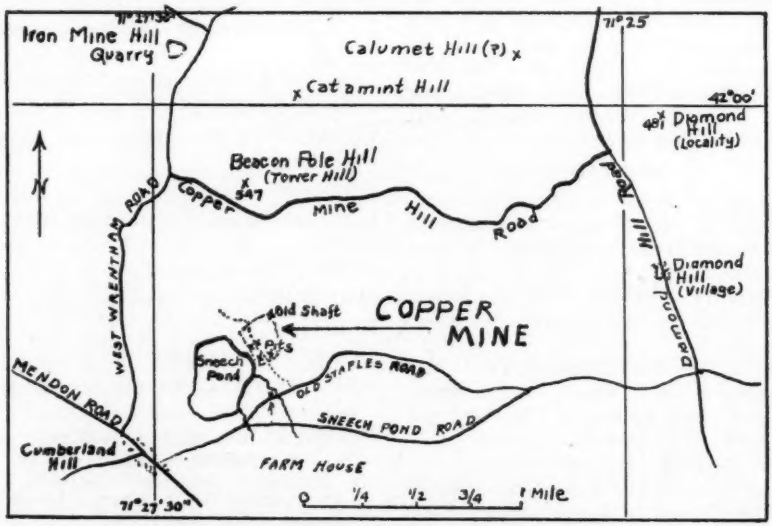
The last Sunday in October, 1946, B. H. Bristol, D. S. White, M. Veno, and the writer decided to find the old copper mine on Copper Mine Hill in Rhode Island. All directions we had previously received had proved to be misleading. This time Veno claimed he had the right dope.

We figured that by starting out at 8:30 a.m. from Foxboro we could spend about 3½ hours at the mine and still get back home for dinner by 1:00 p.m. Bristol and I got away on time. I lost the flip of the coin so was driving (as usual). We picked up White at his home near Plainville, Mass., and proceeded to Diamond Hill, R. I., where we met Veno who had come from Attleboro, Mass. Veno had arrived some time before and had climbed to the top of Diamond Hill and came down with three fine clusters of quartz crystals.

Veno led the way in his car. We proceeded down the Diamond Hill Road, turned right on the Sneech Pond Road, took the right fork (old Staples Road), then making a sharp right we turned in and stopped at the first farm house and asked directions. (I found out later that the mine is in their cow pasture).

Proceeding on there is a low spot in the road where in wet weather the brook goes over the road. We just got across that and then came to a water bar which had to be navigated in low gear. Just over the water bar we had to make a very sharp left onto a very good dirt road. A short distance in on that road brought us to a gate with a sign on it which says —"Private Drive—No Passing". The gate was open and as we couldn't read we continued on to the first house where we parked our cars. (I found out later that if the gate had been closed the people, where we had inquired directions, would have told us to go in but to close the gate behind us. The sign is evidently for the uninitiated).

A short distance past the gate brings us to the mine. We found three main pits and one does not realize their size until he gets in there. I didn't attempt to pace them off but they appear to be from three



Map showing location of Copper Mine on Copper Mine Hill, R. I.

to five hundred feet long and sixty or seventy feet deep.

The scenery was beautiful, the autumn foliage, the green junipers and red barberries made a beautiful setting for the pits. White, who is a color photography hound, was soon busy climbing hither and yon taking pictures. He did pick up a few "rocks", too.

Veno picked up a chunk of rock with some small crystals of azurite showing. We reduced that to a number of smaller specimens and in doing so exposed some brownish grossularite garnet crystals and small masses of crystalline white calcite. A few pyrite crystals were found but not of good quality like those we had found before at the slate quarry in Plainville, Mass. (See "Two localities near Plainville, Mass., Rocks and Minerals, Nov. 1946, pp. 754-755, by A. M. Dixon).

Climbing up above the pits we found an old shaft, about six feet square and about fifteen feet down to the accumulated leaves at the bottom. Some one suggested dropping White down to see if the bottom was solid but we didn't act upon it. Lower down the hill, not far from the shaft, was another old working which was cut in on a curve and terminated in a puddle. We didn"t check that for depth, either.

Looking down from these old workings is a well defined ramp. Going down this ramp we found a boulder with coatings of azurite and malachite. Some one had previously tried to break off specimens from this boulder but had been unsuccessful. We managed to roll it over and to attack it from a different angle and thus obtained enough specimens to go around with a few extras. By that time our schedule was up and we regretfully left and headed for home by way of the West Wrentham Road.

As we were travelling the West Wrentham Road,we noticed a quarry on our left. Several cars and a group of people were in it but we had no time left so we kept on—mentally marking the spot for another trip. We soon passed a sign which read—"Sacco Stone and Asphalt Co."—so I presume that must be the name of the quarry. (I later learned that this is the famous Iron Mine Hill quarry which is noted for many minerals).

The specimens we picked up at the mine are not spectacular but they remind us of a nice trip and some beautiful scenery. Incidently Veno picked up a nice block of actinolite. Among other minerals occurring at the mine are calcite, chalcopyrite, epidote, hornblende, magnetite, etc.

Bristol in one of the large pits at the copper mine.

Examining an interesting find at the copper mine. Left to right—White, Bristol Veno.

I can understand why people have built homes there—we counted six of them. It is due to the nice scenery!

REFERENCE

Minerals and Associated Rocks at Copper Mine Hill, Rhode Island, by Alonzo Quinn and John A. Young, Jr., Am. Min., April, 1937, pp. 279-289.

BIBLIOGRAPHICAL NOTES

The Mineral Key: By Dr. Howard B. Graves, Jr.

This new book is designed to enable an amateur mineralogist and collector to identify and become better acquainted with his mineral specimens without the use of expensive equipment or special training in mineralogy. It is not a complete reference book on mineralogy, just a key for determining minerals.

The methods of identification used by the author are divided into two classes—physical properties and chemical tests. The physical properties are further divided as follows:—color, streak, luster, hardness, habit, fusibility, cleavage and fracture, tenacity. Chemical tests —use of the blowpipe and wet tests.

Once the methods of identification are mastered, the amateur collector can easily identify his specimens and especially so if he refers to the Identification Tables. The Tablets cover 823 minerals which are arranged in a systematic manner giving the names of the various minerals, chemical compositions, color, hardness, and other distinguishing characteristics.

An attempt has been made by the author to include all minerals that may be collected in the field or purchased from a number of dealers in the United States. Minerals occurring only in foreign localities are included if they are generally stocked by American dealers.

Dr. Graves, a member of the R. & M. A., is a chemist with the Research Division, International Minerals and Chemical Corporation; formerly chemist, E. I. DuPont De Nemours; formerly geologist, The Texas Company.

The Mineral Key is 5 x 7¼ inches in size, contains 178 pages (with a black cover), and sells at $4.00. Printed by the McGraw-Hill Book Co., Inc., 330 West 42nd Str., New York 18, N. Y.

RENEW SUBSCRIPTIONS PROMPTLY

Many subscriptions will expire with the December issue. If your subscription will expire, renew it promptly so that it may not be overlooked. If you are planning to go away on a long trip, check up on your subscription. Extend it, if necessary, for another year rather than have it expire while you are away.

Please note that *Rocks and Minerals* comes out around the 20th of the month.

MINERALS ON THE SIDE

BY JAMES A. TAYLOR

Last June I had another compromise trip, that is, divided 9 to 1 between the family and minerals. We had ten delightful days and went all around the rain area, along the "Southern Tier" of New York to south of Rochester, along the north ends of the Finger Lakes to Skaneateles, north to Henderson Harbor where I renewed my memories of camping and bass fishing of 50 years ago. There is an ancient Indian village site there. I puddled around a bit on the site but found nothing. Then the Thousand Island Club overnight, Ottawa for three days, Mount Tremblant in the Laurentians overnight, and it was plenty because of the grossly abused quota of black flies, all of them fearless repeat biters. Then Montreal and by way of the new 30 mile straight highway to the border to Lake Champlain (a nice hotel at Westport) Lake Placid, Little Falls, Cooperstown and home. I can recommend the route to any one who loves the most charming scenery of New York and good hotels everywhere.

I had planned the trip carefully and at the May meeting of the New York Mineralogical Club I had suggested that if any members had been to the proposed part of Canada, I would appreciate their telling me of their experience. Four brothers stepped up and gave me some very fine tips on mines, loaned me maps and made the trip successful for me. Mineral collectors are that way and it is mighty nice to meet such helpful consideration.

Collecting in Canada

At Ottawa I spent the entire Saturday in visiting two mica mines—through Hull, over the Gatineau River to the east shore—in all about 15 miles to Cantley. At the first mine, the Vavasour, up a short dirt road to the west just before the "village", I found some very interesting apatites, grey green and brown in a beautiful pink calcite. The apatites I found had mostly rounded, fused looking terminations. There was plenty of phlogopite on the dumps in books too small to be commercially valuable but very interesting specimens, pyrite and the striking calcite. The latter does not fluoresce under the mercury or argon lights. There were no black flies. The mine is in operation now by shaft and tunnel. Saturday is a bad day because they close at noon and the watchman was due at a ball game and was above bribery. After a couple of hours I was outside the new and high wire net fence.

I then went to the Williams mine a mile or so north and west of the road. The mine is a half mile up a hill and back of the home of a Mr. Martin, a very friendly farmer who had given up planting his farm because of continued torrential rains but who nevertheless was at peace with the world. This mine has been abandoned for several years. I got one fair, green, hard apatite somewhat translucent, lots of phlogopite and uncountable bites from the most persistent, savage and hungry black flies I had ever seen. A knotted handkerchief over my head and neck helped a bit but the more mature ones were able to penetrate my stockings. It would be nice to introduce this breed to the Russians by way of threat and intimidation. Several times I nearly lost my balance on the dump fighting the unequal contest. Fortunately no one was there to hear me. The apatites were mostly small and very fragile from weathering and while plentiful it was almost impossible to get them out whole. Here there was no pink calcite while at the other mine the mica was found only in such calcite.

A vain search for quartz crystals

I had been told that the big operation of straightening the Mohawk River at Little Falls, N. Y., was a good place for Herkimer County quartz "diamonds". The information was wrong. I spent more than an hour going over the huge dumps in a blistering sun and saw no sign of any. Several foremen and engineers said that they had never seen any in the operation. I kept a sharp lookout

(*Continued on page 1031*)

THE OLD SAILOR HOLDS FORTH ON GYPSUM

BY TIMBER HITCH

So it's a yarn you want. All right, I'll do my best. What shall we spin it around? Flying fish? Mermaids? Rocks, you say. That's all you rock-hounds think about. Rocks, minerals, crystals—I never sailed with such a crew!!!

Well, let me see. This talking about rocks puts a terrible strain on my rigging. Have to use so many six-bit words. I mentioned flying fish, but you would not have that, so I will tell you about some rocks that I found that looked just like the fins on those critters. I don't happen to have a flying fish handy, but I do have the rocks, so you can't say that I cut this yarn out of the blue sky.

Story starts awhile after I swallowed the anchor and bought me that little house and plot of ground down in Old Virginny. I joined up with a crew in Washington, D.C., that call themselves the District of Columbia Mineralogical Society. They told me I could sign on if I wouldn't pester them too much with fool questions.

So — one day last spring the crowd of us went on a trip to Fort Washington, Maryland. Quite an old place, parts of it were used back in G. Washington's time and it was re-designed after that by the same Major L'Enfant who laid out the streets of Washington.

After tramping through a near-jungle for a mile or so we fetched up at the bottom of a cliff, right on the edge of Piscataway Creek, about a mile above where it joins the Potomac. From the top of the cliff you can see the roofs of Mt. Vernon, across the river. Now this cliff drops sheer for about fifty feet and the cliff wall is composed of a mixture of clay and pebbles. The skipper called it a Cretaceous formation. In the cliff side we found nice little groups of very clear selenite crystals, most of which were all tangled up in the pebbles. As you know, this selenite is one form of gypsum, and gypsum is the stuff that plaster is made from.

In my travels I have seen lots of beautiful things made of plaster; walls and ornamental work and statues and a whole book full of things. But I saw things that day that were far prettier than any of them, and made by old Mother Nature herself. Yes-sir, down at the foot of the cliff where it shelves off into the water, we dug around in some grayish dirt and came up with some clusters of gypsum that were a gray color, and in such shapes that you wouldn't believe.

Some were like flowers and some like little clusters of fish scales and I found one little fellow that would have made a perfect throne for the king of the little-folk who live in the woods. Only crystals that I ever found that were located with the finger tips, rather than with the eye. Dig up a chunk of dirt, break it up in pieces and keep the ones that stick your fingers. You seldom see what you have until you get them home and wash them.

Did someone say something about a flying fish? Oh yes, up the cliff a ways was another patch of this grayish dirt and in it we found some more of the rosettes. (That's a good word for them). They were much larger than the other ones, but they came loose very easily and all that was left of them was a hand full of "fins". That is a common and very apt name for them, and I have one that is a little over three inches long and for all the world like a flying fish's fin.

That wasn't the only form of near-marine life that I found. Right down at the water's edge I dug into a little cave (it was a muskrat's home, but I didn't find that out until later.) Broke open a chunk of the dirt and found what was left of some clam shells. Just prints of them in the dirt, but some of them were outlined with a sheet of tiny little selenite crystals, not more than a sixteenth of an inch long.

I remember reading somewhere that iron pyrites have a habit of decomposing and the sulphuric acid from them would join up with lime and create gysum. I asked the skipper if this could have hap-

pened there. He said it could be that way, but he had not seen any pyrites in that area. Several weeks later I went back there with another ex-sailor and was lucky enough to find some very small and bedraggled looking pyrites in a chunk of clay. So there is the picture. Pyrite to sulphuric acid. Clam shells, mostly lime. Mix them and you have gypsum. On this second trip I found a perfect half of a clam shell that was completely altered to selenite crystals. Needless to say, I made a special box for it and it is safe at home on the special shelf.

Beside the clear crystals from the pebble formation and the gray rosettes and fins from the gray dirt, we found some reddish groups of fins in a band of red clay. This clay had hardened and cracked until it was almost shale and these groups all came apart when we tried to get them out. Some of these fins were better than four inches long. Some day I hope to dig down in this strip of clay and see if I can find a soft spot in it. Should find some nice rosettes, if I do.

Up the creek about two-hundred yards is a belt of blue clay that was full of large, clear selenite crystals. These were unusual in that they consisted of a large single crystal with a radiating group of smaller crystals growing out of each side in line with the *b* or ortho-axis. Some of these have been found that measured eight inches in length, but the best any of us could do was about four inches long.

Also found some radiating balls of crystals that ran as large as two to three inches in diameter, but they all came to pieces when they were taken out of the clay. On my second trip there I did find three small balls of these crystals, about three-quarters of an inch in diameter, and was fortunate enough to get them out complete.

Almost forgot to tell you, all of these finds, except the largest clear crystals, had to be gone over—to borrow a phrase from the chemist—in the dry way and the wet way. Meaning that the bulk of the dry dirt had to picked off with a probe and the rest washed off under running water with the aid of a tooth brush.

The results were worth the trouble, though. After I got the lot all washed and spread out on my table, I was surprised to find that I could work out a continuity of the growth of the "fins". First, the clear single crystals. Then crystals that were part clear and part dark with the inclusions—whatever it is—that gives them their peculiar color. Next came gray single crystals that had started to exfoliate on the prism faces; these faces turning outward and spreading. Finally the completely foliated crystals; the edge between the pyramid faces only showing as a ridge on the concave side of the fins and the ortho-pinacoids completely obliterated. The faces, or concave side of the fins being what was left of the prism faces.

Also found a few "butterfly" twins that had started to exfoliate, but did not find any clear butterfly twins at all.

For the information of any of you who might get down that way, the Fort is now under the jurisdiction of the Department of Parks. Permission to dig may be obtained from the Police officer in charge at the Fort. Tell him you want to get to the "High Cliff". The location is marked on the map in the fire house, and there is a road that will take you almost to the top of the cliff. The location of Ft. Washington is shown on the various road maps issued by the oil companies and on the D.C. map put out by the A.A.A.

Well, the sun is under the yard-arm and it is time to stow this stuff and splice the main-brace. See you next trip.

Grieger's Fifteenth Anniversary Catalog

Grieger's Fifteenth Anniversary Catalog, which has just been released, is one of the finest on the subject covered we have ever seen. It is 9 x 12 inches in size and contains 48 pages with an attractive green and white cover. The catalog lists lapidary equipment, jewelry metals, tools, findings, ring and brooch mountings, fluorescent lamps and minerals, gem materials, books, etc. It is profusely illustrated, too. And in addition it has many valuable hints, suggestions, and notes on cutting, polishing, and jewelry making.

Copies sell at 35c each. Order your copy TODAY from Grieger's, 1633 E. Walnut St., Pasadena 4, Calif.

WORLD NEWS ON MINERAL OCCURRENCES

(Bureau of Mines **Mineral Trade Notes,** June 20, 1947

I. METALS

ALUMINUM

France.—French output of aluminum in the first quarter of 1947 totaled 8,806 metric tons.

It is reported that the French have produced a new aluminum alloy, "Zicral," containing 7 to 8.5 percent zinc, 1.75 to 3 percent magnesium, 1 to 2 percent copper, 0.1 to 0.4 percent chrome, 0.1 to 0.6 percent manganese, and 0.7 percent iron and silica.

COPPER

India.—The Indian Copper Corp., the sole producer of copper in India, operates the Mosaboni, Dhobani, and Badia mines. The ore is transported from the mines by a 6-mile aerial tramway to the plant at Moubhandar on the Subarnarekha River and the Bengal Nagpur Railway.

NICKEL

Celebes.—Recent investigations on the Island of Celebes have disclosed nickel deposits in Central Celebes north of Golf Boni. The deposits are being investigated by the Billiton Tin Co.

TIN

Tanganyika.—During the first quarter of 1947, 36 long tons of tin concentrates were exported from Tanganyika, compared with 48 tons during the same period of 1946. (Foreign Service Clerk N. Elizabeth Moore, Mombasa.)

United Kingdom.—Tin production in the United Kingdom is limited to the output of two deep mines in Cornwall—Geevor and South Crofty—and some production from "streamers." Production is now at the rate of about 1,000 long tons (metal content) a year, compared with prewar output of about 2,000 tons. In addition to domestic output, tin concentrates are imported from Bolivia and Nigeria and smelted by Williams, Harvey and Co. and Capper Pass and Son.

II. INDUSTRIAL MINERALS

PRECIOUS, SEMIPRECIOUS, AND INDUSTRIAL STONES

Madagascar.—Stones found in Madagascar include the following: Sapphire (very rare at present); aquamarine; beryl (blue, light green, and yellow); tourmaline (red, light red, and green); spessartite; morganite; white topaz; garnet; water sapphire; kunzite; peridot; amethyst quartz and citrine quartz (the latter, when cut, is generally known as topaz); orthose, of no great commercial value; chalcedony, which, when cut and according to the hue, is sold as opal, very rare at present. Industrial stones such as rock crystal, amazonite, rose quartz, agate, and black spinnel also are found.

Garnets, peridot, orthose, and water sapphires come from the southern regions of Madagascar; chalcedony and agate from the north central plateau and in the Analalava region on the northwest coast; all others are mined on the central plateau, in the Antsirabe and Ambositra regions, and in the Ankazobe region, the last-named supplying beryls only.

Mines are worked superficially, and after the best products are taken they are left idle or even abandoned, and new claims are sought. The prospectors do not make fortunes by working the precious-stone mines but have been able to earn a living. Production has declined stead-

PRODUCTION OF STONES IN MADAGASCAR, IN KILOGRAMS

Year	Beryls, tourmalines, sapphires, opals and others	Garnets and amethysts	Industrial stones
1908	155	82	89
1913	217	2	55
1918	159	788	15,252
1923	237	5,989	108,653
1928	138	3,629	56,245
1933	16	131	15,879
1938	7	1,946	110,705
1943	59	108	6,923
1945	14	26	3,173

ily since 1930. At present, as the surface is exhausted, to work the precious stone mines would require industrial equipment, deep trenching, and galleries driven, and, considering the scarcity of labor and the relatively high prices paid to unskilled labor, the cost of equipment, and the hazards, miners are not enthusiastic about it.

The accompanying table gives the output of precious, semiprecious, and industrial stones for a number of selected years. Under the heading "industrial stones," rock crystal, citrine and rose quartz, agate, and amazonite are included.

At present the only stones to be found in the open market, either crude or cut, are critine quartz and amethyst quartz and garnets Cut beryls are scarce and can be found only in the jewelers' shops.

It may be mentioned that some years ago dark-blue beryls were on the market. A native mineralogist had succeeded in bringing green beryls to this shade by heating them over a charcoal fire in a pan.

III. MISCELLANEOUS INFORMATION
ICELAND

General.—A certain amount of mineralogical research has been done in Iceland and some geologists believe that metallic ores, petroleum, and other mineral substances may exist in large quantities somewhere beneath Iceland's extensive basalt anl lava surface, but no important deposits have been discovered. Moreover, the few minerals that are known to exist are not exploited commercially to any extent.

Very little mining is done in Iceland. About 11,000 metric tons of peat and unknown quantities of sand and gravel are dug from the earth and used locally. Peat is obtained from various farms by the resident farmers for their own domestic use and there is no organized trade in it. Sand and gravel output varies from year to year depending upon the amount of construction being undertaken. No figures are recorded of the quantities taken. The State Highway Department draws upon a number of pits, utilizing its own labor and trucks as needed. Private contractors as well as the various municipalities follow the same practice.

The mining of Iceland spar for export for use in other countries in the manufacture of optical instruments is virtually nil. In 1946, it is reported, about 2 kilograms of it were exported to France. The spar deposits nevertheless, are worked from time to time to provide spar gravel which is used in the stucco finishing of the exterior surfaces of concrete dwelling structures. Here, too, there is little information and no figures as to the quantity extracted.

Natural pumice stones found in the Snaelfelsness region, are brought irregularly to Reykjavik where they are crushed, sorted washed, and compressed into blocks which are then used for insulating the interior of concrete structures. One firm in Reykjavik handles this business. The activity of the operations varies with the amount of construction work. Although the pumice is high grade extremely porous and light, it has not been found practicable to gather it for commercial export.

All important minerals entering into international trade have to be imported. Minerals imported in 1946 are as follows:

Imports of minerals, 1946, metric tons

Coal and coke	95,529
Fuel oils	58,961
Lubricating oils	2,732
Other oils	1,666
Salt	20,228
Cement	73,498
Other minerals (raw)	1,588
Metal ores, slag, etc.	93
Total	254,295

It is expected that imports in succeeding years will be about the same for all the foregoing mineral products except for cement, imports of which probably will decline noticeably as soon as the present building boom declines.

(Charge d'affaires ad interim William C. Trimble, Reykjavik.)

MINERALS ON THE SIDE

(*Continued from page 1027*)

through Middleville and saw no ledges or rocks that seemed to be possible hunting grounds.

We spent so much time looking over the fourteen cardinals at the Marian Congress at Ottawa that I never did get to see some other mines nearby nor the fossil fish beds up the Ottawa River.

PRACTICAL SUGGESTIONS FOR THE MINERALOGIST

BY HERBERT O. ALBRECHT
62 S. Hillcrest Rd., Springfield, Pa.

Lubricant for Sawing and Lapping Grinding Thin Sections

Try household fuel oil (cost, about 9 cents per gallon) instead of lubricating oil-kerosene mixtures, or "soluble oil" emulsions for diamond sawing and power-and hand-lapping. Locate the drain pipe from saw conveniently and keep a pail full of oil hanging under it. Dipper up a quart of oil occasionally into an elevated can which is connected by 3/16" copper tubing to a 7/32" axial hole in saw-arbor. Arbor should be drilled with three ⅛" radial holes where saw fits over it. The flanges supporting saw should be recessed and have six radial notches filed (or drilled: clamp both flanges together) to permit egress of oil by centrifugal force. Run saw at full permissable speed. Rinse specimens and hands in the pail, as necessary.

This system is better, in my opinion, than anything else short of a strong pumped stream of oil on the saw and specimen. It is cheaper, and as convenient and cleanly as the best. The lower heat-capacity of the oil compared with emulsions is not a factor unless you do heavy sawing, indeed. The fire hazard, though to be considered, is slightly lower than with kerosene mixtures. Though the hands must be rinsed in the oil, rather than in water, the special emulsions are frequently gummy and messy. If any other greasy work is done in the shop, the pail of oil is an asset for cleaning hands, tools and work.

For lapping on a horizontal cast-iron lap, mix a tablespoonful of 220 carbo with about its bulk of fuel oil in a soup can and apply to the center of rotating lap with a 1" brush. Most thin sections can be thus ground in a fraction of the time taken with water as a lubricant, or using a carbo wheel. Dip specimen in oil pail to observe it. A slight dissolving of the excess balsam mounting cement is advantageous, and partly responsible, I believe, for the fast results. Viscosity of the lubricant is also significant, however, and to really observe the fine points, should be adjusted with motor oil according to the type of material ground and the grade of carbo. (Higher viscosity for coarser carbo and tougher materials. Jade, emery, agate are fine-textured and tough; quartz crystals and topaz are homogeneous and brittle, granite and shale coarse-textured and friable in varying degrees. Hardness is a secondary consideration as against brittleness in grinding with anything as hard as carbo). High viscosity favors economy of carbo, by reducing centrifugal loss. Run a 10" lap about 350 rpm. There are a number of resinous materials and plasticizers today which can be adapted for mounting media of desired consistency, friability refractive index and solubility.

For hand-lapping proceed as above using a heavy flat brass plate and 400 carbo, or finer. This, too, is faster than with water and gives, I believe, a better finish with a given grade of carbo. Mount two polaroids in crossed position with a 15 watt bulb behind them at a convenient height, and slip slide between them for preliminary check on thickness of section. Carbo settles fast enough in fuel oil so that for ordinary work the same pail (above) can be used for cleaning slides and the lap, itself, during fine grinding. This is a great convenience. Proceed through all stages promptly, when making thin sections and wipe slide with cloth, when finished or if allowed to stand at some point, to avoid further solution of balsam.

Size of Specimens and their Texture Trimming and Recording Specimens

When space is limited, as in most homes, the size of specimens becomes a critical point, particularly for systematic study, as the collection increases. What are the rational criteria of minimum and maximum specimen size? Most collectors apparently do not pose themselves this question. Not to analyze very deeply, it appears that the most important criterion for study-collections, and one that applies with more or less force to all, is *texture*. There is little or no point in displaying

a square foot of specimen no part of which shows much except under the microscope, just because one has paid money for it, has been lucky enough to find it, or even because such a large piece is a rare or interesting occurrence. On the other hand, a specimen consisting of crystals each an inch or two in diameter might need to be a foot across, if possible, to show the characteristic grouping and matrix to full advantage, if these have importance. Hence, it is good sense in most cases, to cut down fine-textured specimens to a minimum handy size, say "1 x 2", and trade the trimmings, or present them to young collectors. Cut down coarser specimens to the minimum which will give all the information of which the specimen is capable. In consistency with this spirit, do not retain duplicates simply because they are "good".

Please realize it hurts me, too, like sawing my arm, to cut down a piece, say, of sparkling uvarovite, even if it is essentialy micro-mount material. But I believe I'm ultimately happier for it when numbered specimens mount into thousands and a family needs its rights protected.

As for those who collect for the beauty or rarity of the specimens, even they frequently could achieve an equal or better effect in much smaller compass, to the advantage of the house and other collectors. There are, to be sure, specimens, which should eventually find their way in to museums, which even I would not want to see cut down, since size, in itself, has certain technical advantages for public display.

A good diamond saw, now so easy to possess, makes practically obsolete other methods of trimming specimens, and frequently permits the operation where otherwise impossible. A fairly satisfactory trimmer, however, can be made from a pipe-vise with its jaws suitably altered. I find it of interest to weigh specimens before and after trimming, and all of my numbered specimens are weighed and recorded to the nearest 1/10 gram under 20 grams, and nearest gram over 20 grams (a small platform beam scale such as used by chemists is convenient). This greatly helps identification, in case labeling on the specimen is not feasible or permanent.

Quick Specific Gravity Determination

A very simple way to find specific gravities of ordinary sized specimens is to weigh them on a platform beam scale (capacity 2000 grams) to a tenth gram and then note the apparent *increase* in weight of a beaker of water counterpoised on the scale when the specimen is suspended wholly in the water by a thread. The handiness of this procedure may not be immediately apparent unless one has actually used the common method with a suspended pan balance. The calculation is essentially the same since the apparent *gain* in weight in this method equals the apparent *loss* in weight of the specimen in the standard method, the figure being the weight of water displaced by the specimen. Thus Sp. Gr. equals weight of specimen ÷ apparent increase in weight of beaker. Tap-water and a fairly strong thread may be used, temperature correction ignored, and still a specific gravity better than to one decimal place obtained in a minute or two, from a 20 gram, or heavier, specimen. This will frequently identify pure massive minerals, show the internal presence of ore in rock, etc.

By this method I once found $15 worth of gold in a $5 specimen of gold in quartz, and showed the absence of iron in a 30 pound "meteorite", using the bathroom scale and a garbage pail. The gold content was calculated thus:

(*sp. gr. gold*) (*sp. gr. specimen minus sp. gr. quartz*) (*wgt. specimen*)

(sp. gr. specimen) (sp. gr. gold minus sp. gr. quartz) = wgt. gold in specimen

Oxy-Gas Blowpipe for Testing Minerals

The advantages of the very hot oxy-gas flame include a much superior replacement of the mouth blowpipe for identifying minerals. Probably the small cylinders of medical oxygen would be most convenient for Rockhounds. Small laboratory torches are obtainable, and are safer than home-made affairs may be. Any

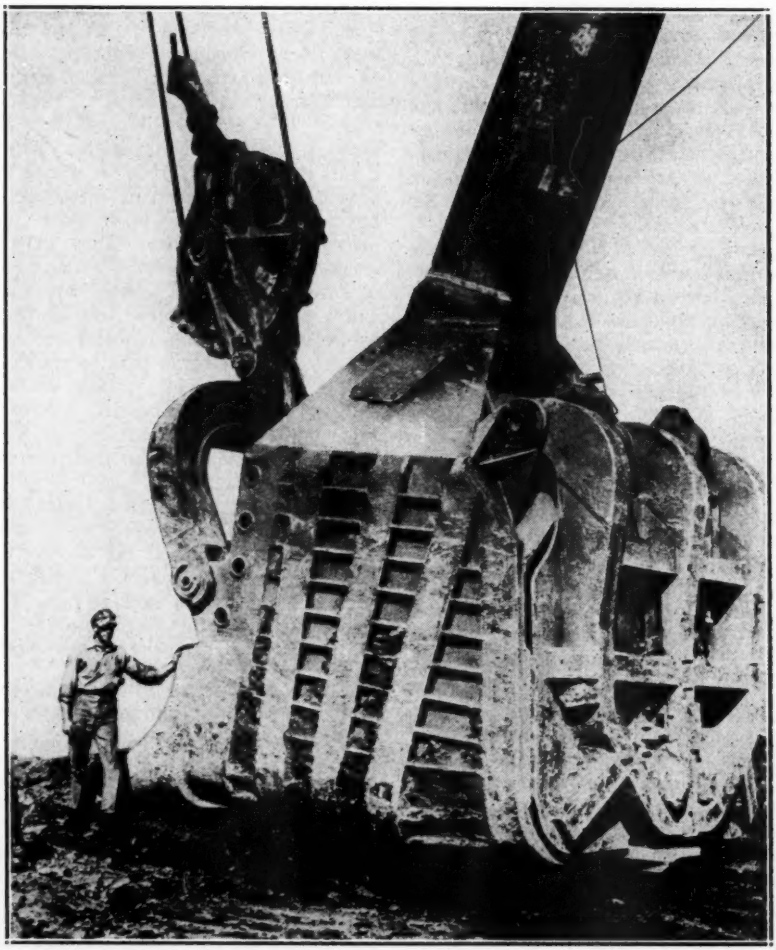
(*Continued on page 1035*)

WORLD'S LARGEST SHOVEL DIPPER AT WORK IN OHIO COAL FIELDS

The world's largest shovel dipper, now being operated in coal fields near Cadiz, Ohio, by the M. A. Hanna Coal Company, probably would be just another hunk of steel if it were not for a few pounds of rubber.

Engineers of the Marion Power Shovel Company, Marion, Ohio, were having trouble with "Big Bertha" of the power shovel world. Designed to lift 40 cubic yards of earth—more than enough to fill a room 12 x 10 x 9—at a single bite, the shovel frequently was idle because the hinge pins on the huge dipper door sheared off with disconcerting regularity.

When the big dipper drops its 40 cubic yard load of earth and rocks, many of which are as big as automobiles, the



Some idea of the size of the huge dipper may be obtained in the above photograph which shows Bud Snodgrass, one of the operators, standing at the front of the dipper.

door swings in a wide arc and often comes into the path of the falling load, the resultant shock loads inducing fatigue failure in the metal hinge pins.

The Marion company called on Firestone Industrial Products Company engineers and, after an intensive study of the problem, a rubber bushing was developed to cushion these peak loads inherent in a power shovel dipper.

The huge dipper doors, 10 feet square, are hung on three hinges, each on a four-foot center with two rubber bushings on each hinge. The rubber bushings, developed by Firestone, consists of three steel rings and two rubber rings telescoped together. The steel rings are one-half inch thick and four and one-half inches wide. The rubber inserts are five-eighths of an inch thick on the inner ring and seven-eights of an inch thick on the outer ring and are bonded to the metal by a special Firestone process.

The bushings are not subject to frictional wear as this is absorbed by a composition bushing. Since incorporation of the rubber bushings in the door hinges, the big dipper has been on the job 24 hours a day, seven days a week, for over a year without any loss of time due to pin failures.

Construction of the dipper, the largest ever designed, was a real achievement for Marion engineers. It is of all-welded construction and was made possible by the application of war-developed welding rods and steels of high tensile strength and high abrasive resistance. The new steels and welding rod made it possible for a dipper and handle design which is 30,000 pounds lighter than materials formerly used in attaining the same strength. This enabled the Marion company to install the huge dipper on a machine which originally was designed to operate a 35 cubic yard dipper without increasing the front end weight of the unit even with a fully loaded dipper.

The big dipper is used to strip deep overburden from coal veins in Hanna properties in the Cadiz area. On a 24-hour shift, the machine rapidly bites a patch 250 feet wide through banks of overburden, in many instances 80 feet deep, while smaller machines follow to load the bared coal veins. The Marion machine is powered by electricity and consumes enough power daily to supply the domestic needs of a community of 3,000 persons.

PRACTICAL SUGGESTIONS

(*Continued from page 1033*)

combustible gas may be used with the oxygen (acetylene, hydrogen, coal gas, water gas, natural gas) with some difference in the results. However these do not necessarily correspond with the data for the ordinary blowpipe in any case. On the contrary, make your own data by control experiments on known materials (which a careful worker must carry out even by the standard method). The purpose here is merely to suggest the use of this powerful tool, which has at least the following advantages:

(1) Can be used on corners of the specimen rather than on small splinters, and gives easily reproducible results;

(2) Gives some observable effect more quickly and on a greater variety of minerals;

(3) Gives good flame-tests for the alkalis, alkaline earths, boron, and other elements without preparation of the specimen and frequently where not obtainable otherwise (for example, on refractory silicates).

CLUB AND SOCIETY NOTES

Attention Secretaries—If you want your reports to appear in the January issue, they must reach us by December 20th—the Editor.

Pacific Mineral Society, Inc. of Los Angeles, Calif.

On Friday, October 10th, 1947, the Pacific Mineral Society, Inc. was pleasantly entertained by Mr. Wm. R. Harriman with, not a lecture as he said, but "yarn spinning". His subject was "The Romance of Gold Mining". Mr. Harriman is a graduate of the School of Mines in Arizona and has been Superintendent of Rancho Los Amigos since 1911. He has been President of the Los Angeles Mineralogical Society the past two years. Being a native Californian, born in Los Angeles, he has known many of the old miners; some who made lucky strikes, even fabulous and fantastic, and others not so lucky. Before starting his yarn spinning, he told us a few statistics about gold. The total amount of gold produced in the history of mankind would make a fifty foot cube; a ton of gold would be a sphere 17 inches in diameter and would represent a little over a million dollars. Africa produced 15 billion dollars worth in sixty years, the largest production of any country in the world—ten per cent more than we have in the ground at Fort Knox.

In modern sluice boxes the miner puts blankets, gunny sacks or carpet to catch the gold. In ancient times, the hide of a sheep was used to catch and retain the gold, and after a time the wool became heavily impregnated with the metal. Mr. Harriman stated that the voyage of Jason in quest of the golden fleece was not a myth, but an actual expedition to Colchis after gold.

In California and the western part of the country, the Indians had no appreciation for gold until they saw the interest of the white man, but the natives along the Mexican border and farther south mined it in very ancient times and their mines, many only a small hole barely large enough to get into, are still found occasionally, with the "chicken ladder" (a notched log) up which they carried the ore in animal skins. Their mining methods naturally were slow and tedious. They built a fire at the rock which they wished to mine and after it became very hot, they poured cold water on it, shattering and breaking it enough to get a small amount of rock loosened. This operation was repeated over and over.

Mr. Harriman then went on to state that while most people considered Marshall's discovery of gold to be the first in California, Jedediah Smith in 1826 found gold on the east side of the Sierras and took out about $30,000 worth. In 1839 a group of thirty Mexican gold miners were brought into California to work the placer deposit of Ventura County, where $65,000 was taken out. These Mexican miners later scattered over southern California, especially in the Mojave Desert area, and worked the land.

Mr. Harriman went on to relate many interesting stories of rich gold strikes—in Alaska, the Yellow Aster at Randsburg, the various mines in the Soledad mountain area, Holcomb Valley, San Gabriel Canyon, Tujunga, and even in the Los Angeles basin, citing the fact that in digging the foundation of the Los Angeles Times building, the Alexandria Hotel and other places, a number of gold nuggets were found at each place. In closing, he emphasized the fact that there are still rich strikes being made and more to be made in the future—if one can just find the right place!

Dr. Foster kindly brought and displayed his beautiful collection of Brazilian phantom quartz crystals, and gold specimens from California, Arizona, Colorado and Nevada.

The field trip this month will be to Wrightwood, which is said to be the location of the world's finest actinolite.

Mrs. O. C. Smith
Pub. Chairman

Pomona Valley Mineral Club

The Pomona Valley Mineral Club met for their September meeting in the Chemistry Building at Pomona College. They had as their guests for the evening members of the Old Baldy Lapidary Society.

The major part of the program was given by George J. Belleman, Instructor in Geology and Anthropology at Los Angeles City College. Mr. Belleman lectured on Alluvial Fans, illustrating his talk with slides. These were made during the 1938 flood and showed graphically how the fans were made. He stated that the most perfect fan is the Deer Canyon fan in San Bernardino County.

Members of the club showed cut and polished specimens as well as some very fine silver work.

Glen W. Weist, Corres.,
621 E. Alvarado, Pomona,
Calif.

Connecticut Valley Mineral Club Field Trip to Connecticut

Sunday, July 13, 1947, the Connecticut Valley Mineral Club visited the Hale feldspar quarry at Glastonbury, Conn., and the nearby Strickland feldspar quarry at Portland. The group consisted of 25 members which had met

at the Museum of Natural History, Springfield, Mass., at 8:00 a.m. Messrs. Ben Anderson, Alvin Schortmann, and Joseph Rapulus, members of the field trip committee, acted as guides and assisted the members in the identification of specimens. Mr. and Mrs. Ed. Mason, of the Arcadia Wild Life Sanctuary at Northampton, Mass., had the traditional beginner's luck and secured excellent specimens of manganapatite and autunite.

After the scheduled trip had ended, three carloads of enthusiasts journeyed to the home of Mr. L. W. Little, in East Hampton, Conn., and gloated over his very fine specimens of gemmy golden beryl crystals. Mr. Little then presented fine mineral specimens, collected locally many years ago, to the members of the visiting group. A perfect ending to a perfect day!

Field Trip to New Hampshire

The Connecticut Valley Mineral Club visited the hematite locality at Surry, N. H., and Bill's fluorite mine at Westmoreland, N. H., on Sunday, September 14, 1947.

Seven carloads of collecting enthusiasts met at the post office in Northampton, Mass., at 8:00 a.m. and proceeded to Brattleboro, Vt., where they were joined by Mr. Ed. Pierce of that town who acted as guide from there on. The group reached Surry at 10:00 and worked liked beavers cracking boulders and chiseling the ledge till noon when all set down to a delicious box lunch.

On resuming the journey to the Westmoreland fluorite deposits, Ray Schortmann and his party, and Dick Kellogg and his party, lost the cavalcade at a sharp turn from the main highway and never did catch up with the group. However, they did visit another location where they secured some very good fluorite specimens. Later some of the collectors visited with Ed. Pierce at his home and examined the mineral specimens he had collected on a recent visit to Wyoming and Colorado.

A grand day in a grand country!

Jack Kitson
Easthampton, Mass.

Convention of Midwest Federation of Geological Societies

The Convention of the Midwest Federation of Geological Societies consisting of eleven member Societies was held at Detroit on August 23rd, 24th and 25th. Cranbrook Institute made an ideal setting for the meetings. The museum has one of the finest mineral exhibits in the country. Dr. A. N. Goddard is responsible for the arrangement of the exhibits which are displayed with emphasis upon their beauty and color. The effect is startling.

The Michigan Mineralogical Society as host to the Convention did everything possible for the convenience and entertainment of the guests, and their efforts were well appreciated. John F. Mihelcic, President of the Federation, presided at the meeting. Loretta E. Koppen, Secretary of the Federation, acted in that capacity.

The morning session of August 23rd was devoted to a Director's meeting. In the afternoon, Dr. George V. Cohee of the U. S. Geological Survey, lectured on "The Search for Oil in Michigan", Dr. Willard Parsons of Wayne University, lectured on "Mineralogy of Michigan", and Miss Helen M. Martin, research geologist with the Michigan Geological Survey, lectured on, "The Relation of Michigan Geology to United States History".

The banquet on Saturday night was held in the Rackham building at which the principal speakers were Dr. A. W. Goddard and Ben H. Wilson, President of the National Federation. On Sunday most of the delegates enjoyed a field trip to Clay Center, Ohio, where they collected specimens of fluorite, celestite, and other minerals. On Monday the group divided, part taking a tour of the Ford Motor Plant and Greenfield Village. The others went to the plant of the Champion Spark Plug Co. In the evening delegates were entertained at the homes of the various members of the Detroit Society.

New officers elected were as follows: President, George C. Anderson, Chicago Rocks and Minerals Society; Vice President, Benedict P. Bagrowski, Wisconsin Geological Society; Secretary, Loretta E. Koppen, Geological Society of Minnesota; Treasurer, E. Lillian Mihelcic, Michigan Mineralogical Society. The convention voted unanimously to ratify the Constitution and By-Laws of the National Federation, and elected to become a member thereof. The Midwest Federation is the first Federation to take this action. Ben H. Wilson, Joliet Mineralorists; and Alger R. Syme, Geological Society of Minnesota, were elected as members of the Council of the National Federation, and James O. Montague, Wisconsin Geological Society, and John F. Mihelcic, Michigan Mineralogical Society, were elected as alternate delegates to the Denver meeting of the National Federation.

The Convention next year will be held in Chicago. The host Society will be The Chicago Rocks and Minerals Society assisted by the Marquette Geologists Association.

Loretta E. Koppen
Secretary

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